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J. PIERPONT MORGAN PUBLICATION FUND

REPORTS OF THE
PRINCETON UNIVERSITY EXPEDITIONS
TO PATAGONIA, 1896-1899

J. B. HATCHER
IN CHARGE

EDITED BY
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VOLUME VIII, 2

BOTANY

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PRINCETON, N. J.
THE UNIVERSITY
STUTTGART
SCHWEIZERBART'SCHE VERLAGSHANDLUNG (E. NÄGELE)
1903–6

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REPORTS OF THE
PRINCETON UNIVERSITY EXPEDITIONS TO PATAGONIA
1896-1899

VOLUME VIII, 2

BOTANY

V. FLORA PATAGONICA
(CONCLUDED)

VI. ANALYSIS OF ORDERS AND FAMILIES

VII. COLLECTORS AND BIBLIOGRAPHY

VIII. TOPOGRAPHY

IX. CHARACTER AND ORIGIN OF THE PATAGONIAN FLORA

By GEORGE MACLOSKIE
PRINCETON UNIVERSITY

PRINCETON, N. J.
The University
STUTTGART
Schweizerbart'sche Verlagshandlung (E. Nägele)
1903–6

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Lancaster, Pa.

few-flowered, nearly as long as the leaf. Terminal leaflets 14 mm. long.
N. Patagon.; Chiloe I. (Chili; Peru). Chubut, by Carren-leofú.

2. CALDCLUVIA Don.

Low tree, with terete, opposite *branches*, these, the petioles and the inflorescence tomentillous. *Leaves* simple, opposite, coriaceous, petiolate, oblong-lanceolate, gland-serrate, nervose, with large, leafy subfalcate, serrate *stipules*. *Flowers* small, white, 4–5-merous; in large, long-peduncled, densely flowered, axillary panicles, *calyx* 4–5-partite, with valvate lobes. *Petals* inserted under a hypogynous disk; lance-linear, unguiculate. *Stamens* 8–10 exsert, anthers didymous. *Ovary* free, 2-celled, 2-beaked and styled. *Ovules* numerous, pendulous. *Embryo* in axis of fleshy *endosperm*.

Only species.

C. PANICULATA (Cav.) Don.

(Chilian thickets); W. Patagon.
Characters of genus.

Family 51. ROSACEÆ. The Rose Family.

Trees, shrubs or herbs, commonly with alternate, *stipulate leaves*, and regular, perfect *flowers*. *Calyx* free from, or adnate to, the ovary, 5-(rarely 4–9-)lobed, sometimes with *bracteoles*. *Petals* as many, perigynous, or rarely none. *Stamens* mostly numerous, perigynous. *Carpels* 5–many, rarely fewer, distinct or connate. *Fruit* achenes, drupes, or pomes. *Seeds* normally without endosperm.

Species 1,200, cosmopolitan.

KEY TO THE GENERA.

A. Carpels 5–2 (or 12–1) verticillate, either on a special receptacle or immersed in the persisting axis, each with 2–∞ seeds. Filaments from a broad basis, smaller upwards. Sepals often obsolete. Fruit of follicles free or connate. Seeds wingless, coriaceous or wrinkled. Stamens perigynous. Mostly shrubs. 1. *Spiræa*, p. 468.

*A*2. Carpels 5–2, connate with the inner wall of the hollow, floral axis, and with each other, becoming in fruit a fleshy pome.

- *b*. Carpels several seeded, the seeds in two series. 2. *Cydonia*, p. 468.
- *b*2. Carpels 2-seeded. Floral axis pyriform to globular. 3. *Pyrus*, p. 469.

*A*3. Carpels few or many, on a disk, distinct, each 1–2 ovuled, becoming 1-seeded achenes or drupelets.

- *b*. Floral axis flat or convex. Filaments narrowing from a broad base.

c. Carpels 2-ovuled, becoming a mass of drupelets. No outer calyx. 4. *Rubus*, p. 469.

c2. Carpels 1-ovuled, becoming achenes. Mostly an outer calyx.

d. Seeds pendulous. Achenes nut-like; style deciduous.

e. Carpel-bearing receptacle becoming large and juicy. 5. *Fragaria*, p. 470.

e2. Carpel-bearing receptacle little enlarged in fruit, dry and colorless. 6. *Potentilla*, p. 470.

d2. Seeds erect. Style usually persisting. Flowers 5-merous. Receptacle flat. 7. *Geum*, p. 471.

b2. Floral axis goblet-shaped, completely enclosing the 2–more carpels, usually hardening in fruit. Filaments with slender base, not narrowing above. Sepals 4, rarely 3 or 5. Petals none. Stamens sometimes few or 1–2; carpels few.

c. Outer calyx leaves 4–5, alternating with the sepals. Style basal. Carpels 1–4. Leaves broad, simple, usually lobed. 8. *Alchemilla*, p. 472.

c2. No outer calyx, nor petals. Floral axis spiniferous in fruit, but not a circle of spines. Leaves often pinnately divided.

d. Spines small and short, 1 under each sepal. Carpel 1. Flowers small, solitary, axillary. Fruit a white berry. Small shrubs. 9. *Margyricarpus*, p. 473.

d2. As *Margyricarpus*, but fruit dry, 4-winged. 10. *Tetraglochin*, p. 474.

d3. Spines on the angles of the fruit, or only 1 strong barbed spine under each sepal. Carpels 2. Flowers in erect spikes or heads. Mostly herbs. 11. *Acæna*, p. 475.

A4. Carpels solitary, not adnate to the hollowed receptacle. Styles terminal. Ovary with 2 pendulous ovules, becoming a drupe. Trees or shrubs, with simple stipulate leaves. 12. *Prunus*, p. 485.

1. SPIRÆA Linn.

Shrubs or herbs, usually with pinnately divided *leaves*, and racemose or paniculate, perigynous *flowers*, 4–5-lobed *calyx*, 4–5 *petals*, and 20–60 *stamens*, with didymous *anthers*. *Carpels* 1–8, mostly 5, not united. *Ovules* 2–many. *Follicles* usually dehiscing by one suture.

Species 60, chiefly in N. Temperate parts of Old World; a few in W. Amer.

S. MAGELLANICA Poir.

Leaves petiolate, exstipulate, lanceolate, unequally serrate, nervose. *Racemes* terminal, subsimple. *Flowers* white.

Magellan.

(The only representative of the genus in the S. Hemisphere. *S. argentea* is in New Granada.)

2. CYDONIA Tourn. Quince.

Beautiful shrubs, with simple, deciduous *leaves* and large, scarcely peduncled *flowers*. *Stamens* 20 or more. *Carpels* 5, with numerous seeds in 2 rows. *Styles* united at the base. *Fruit* a pome, large, firm when ripe, strongly fragrant.

"Differs from *Pyrus* only by the ovary-cells having several ovules, and the testa, in European species, being mucilaginous." (Benth. & Hook.)

Species 3.

CYDONIA CYDONIA (Linn. sub *Pyrus*) Karst. (*C. vulgaris* Pers.)

Leaves entire, at first tomentose underneath. *Flowers* standing singly on leafy branches, rather large, mild red. *Calyx-lobes* serrate, persisting on top of the woolly, afterwards smooth, yellowish *pomes*.

(Natives of S. Europe and Orient; and cultivated); Patagon. (doubtless introduced).

3. PYRUS Linn. Apple.

Usually trees, with simple *leaves* and large white or pink *flowers* in simple, terminal *cymes*. *Calyx* adnate to ovary, urn-shaped, 5-lobed. *Petals* 5, rounded. *Ovary* inferior, of 2–5 united carpels, mostly with distinct styles. *Ovules* 2 in each carpel. *Fruit* a pome.

Species 35, N. Temperate Hemisphere.

P. MALUS Linn. Apple. (*Malus malus* Brit.).

Leaves pubescent underneath, subcordate at base. *Pome* globose, 5–8 cm. in diameter, without grit-cells.

Valley of Upper Limay, Patagon., cultivated. Said to have been introduced by Spanish missionaries; it now forms groves and forests, flourishing in N. Patagon., in two varieties, sweet and tart. "Leaves biserrate, velvety beneath." (J. Ball.) "Common in all the preandine region between Lago Nahuel-huapi and Carren-leofú." (Speg.)

4. RUBUS Linn. Blackberry.

Shrubs, mostly prickly, with lobed or pinnate *leaves*, and adnate *stipules*. *Calyx* not bracted, deeply 5-partite, its tube broad. *Fruit* usually consisting of numerous drupelets on an elongated receptacle.

Species 200, N. Temperate; also represented in the Cape, Australia and New Zealand; but very rare in S. Amer., or Fuegia.

R. GEOIDES Smith.

Creeping, with trifid or ternate *leaves*, having a large, ovate terminal lobe, serrate, the lateral lobes small, or wanting, or joined to the terminal.

Peduncle scape-like, 1-flowered, the *flower* yellow, and the *fruit* scarlet and pleasant. "One of the few esculents of these parts."

Magellan; S. Fuegia to Cape Horn. Falklands.

5. FRAGARIA Linn. Strawberry.

Perennial, stemless herbs, propagating by runners, with petiolate, trifoliolate *leaves* having sheathing *stipules*, and white flowers racemed on naked scapes. *Calyx* 5-lobed, with 5 outer bracteoles. *Stamens* many, perigynous. *Achenes* many, on a large pulpy receptacle.

Species 15, N. Temperate Zone of both hemispheres, and the Andes.

F. CHILENSIS Ehrh.

Rootstock large. Densely silky, except on the upper surface of the short-petioled *leaves*. *Leaflets* orbicular-ovate, or obovate, coarsely crenate, their teeth cuspidate.

(Chili): Chonos Archip., and Northwards; Patagon., Chubut.

F. VESCA Linn.

Not very villous. *Leaflets* ovate, obtuse, cuneate. Hairs of peduncles widely spreading; of pedicels appressed. *Scape* longer than leaves.

(Eur., nat. in N. Amer.); Fuegia, Ushuaia.

6. POTENTILLA Linn.

Herbs or shrubs, with digitate or pinnate *leaves*, and cymose or solitary, mostly yellow *flowers*. *Calyx-tube* broad, 5-lobed, and 5-bracteolate. (*Flowers* occasionally 4-merous.) *Stamens* numerous. *Achenes* numerous on a dry receptacle.

Species 150, of N. Temperate Zone, with few in S. Amer. The following is introduced.

P. ANSERINA Linn. Silver-weed.

Herb, spreading by runners. *Stipules* membranous. *Leaves* petioled, pinnate; leaflets 7–25, oblong-lanceolate or obovate, obtuse, the lower generally smaller, all serrate; smooth above, silky beneath. *Peduncles* axillary, solitary, 1-flowered. *Petals* broad, exceeding the ovate-acute calyx-lobes. *Achenes* glabrous.

Chonos Archip. and Temperate regions, N. and S.; N. Patagon., very rare by streams near Nahuel-huapi. (Speg.)

7. GEUM Linn.

Perennial herbs, with pinnate or pinnately-divided *leaves*, the basal leaves larger than the others. *Calyx* 5-lobed, with as many bracteoles. *Petals* 5, yellow to purplish, exceeding the calyx, *stamens* numerous, on the calycine disk. *Carpels* numerous, on the dry receptacle. *Style* filiform, sometimes abruptly bent, or plumose in fruit.

Species 36, in temperate zones, N. and S.; some arctic.

Section *Sieversia*, regarded by some as a distinct genus, has the whole style persisting on the achenes.

KEY TO THE SPECIES.

A. Flowers white, small.	
b. Leaves interruptedly pinnatisect; terminal lobe large. Trifid bract subtending the thick pedicel.	*parviflorum.*
b2. Leaves pinnate; floral leaves in an involucre.	*involucratum.*
A2. Flowers yellow.	
b. Leaves pinnatisect; terminal lobes large.	*chiloënse.*
b2. Radical leaves interruptedly pinnate.	*magellanicum.* *urbanum.*

1. G. CHILOËNSE Balb. (*G. chilense* Lindl.)

Leaves irregularly pinnatisect, crenate; the *terminal lobes* rounded, much exceeding the others.

Chili; Chiloe I; N. Patagon., by Lago Nahuel-huapi; by Rio Sta. Cruz; Punta Arenas. (Perhaps a var. of *G. urbanum* L.) "Flowers yellow, subsessile or long-pedicelled." (Speg.)

2. G. INVOLUCRATUM Juss.

Leaves pinnate; the outermost rotundate-crenate. *Floral leaves* as an involucre. *Scape*, 5-peduncled; naked below, and leafy under the subcapitate flowers. *Corolla* white, shorter than the calyx.

Magellan.

3. G. MAGELLANICUM Comm. (=*G. urbanum* Index Kewensis; see No. 5 below).

Leaves pinnate; the outermost divisions very large and lobed; the lower very small. *Scape* elongate. It grows with *G. involucratum;* but its lateral leaves are much smaller, and with very small leaves interposed.

S. Patagon.; Magellan; Fuegia.

4. GEUM PARVIFLORUM Comm. ex Smith. (*G. magellanicum* Lech. non Comm., *Sieversia albiflora* Hook. f.)

Stem few-flowered, tomentose. *Leaves* hairy, interruptedly pinnatisect, crenate, the terminal lobe large, rounded, obscurely 5-lobed, the *stipules* dissected. *Pedicels* thickened, with a basal trifid bract. Flowers nodding; calyx-lobes erect, equalling the white petals. *Styles* deflexed, hooked, the appendage as long.

Magellan; Fuegia, alpine at Ushuaia. "Like a small *G. urbanum* but the flowers differ."

5. G. URBANUM Linn. (Including No. 3 supra. *G. magellanicum* Comm.)

Stem branching, hairy, erect. Radical *leaves* quinate-pinnatisect; the cauline ternate-palmatisect; the lobes ovate, crenate-dentate; the uppermost 1-lobed, ovate. *Stipules* large, suborbicular. *Calyx-segments* reflexed. *Petals* ovate, rather large, yellow. *Achenial* head spherical. *Styles* glabrous, hooked.

(N. Temperate Zone and N. Zeal.); Magellan, Fuegia, S. Patagon., at head of Rio Chico. (J. B. Hatcher.)

J. D. Hooker states that the Magellan plant shows great variations; petals of the wild specimens being often yellow, and twice as large as the sepals; while in garden specimens the petals are much larger and red or scarlet. The leaves also differ greatly. Index Kewensis relegates the Magellan and N. Zealand forms to the Old-World *G. urbanum.*

8. ALCHEMILLA Linn. (*Alchimilla* Tournef.)

Herbs, with lobed or digitate leaves, adnate stipules, and small greenish clustered flowers. Calyx cup-shaped, contracted at the throat, 4–5-lobed, 4–5-bracteolate. Petals none. Stamens 1–4, short. Carpels 1–4, styles basal or lateral, becoming achenes enclosed in the persistent calyx.

Species 35, Europe, mountains of Africa and of W. Amer., from British Columbia to Chili.

A. ARVENSIS Sm.

Stems branched, leafy. Leaves trifid, pubescent; lobes cuneate, deeply cut. Stipules large. Flowers sessile, axillary.

(Europe) ; S. Patagon., by Rio Sta. Cruz.

ALCHEMILLA TRIPARTITA Ruiz & Pav.

Cespitose. Leaves palmately 3–5-partite ; their segments cuneiform, incised-serrate, or few-cleft upwards. Stipules sheathing, 2–4-cleft. Flowers cymulose, terminal on the branches. Perigonium 8-cleft, its tube appressed, pubescent, its segments glabrous, the outer 4 smaller. Polymorphous.

(Venezuela and southwards) ; Patagon., by Golfo de San Jorge, and Rio Sta. Cruz.

9. MARGYRICARPUS Ruiz. & Pav.

Branching shrubs, with crowded, imbricate *leaves* of two forms (some unequally pinnate, rigid or spinescent, enclosing simple leaves in their axils), and having sessile, solitary *flowers* in the axils. *Calyx* 4–5-merous. *Petals* none. *Stamens* 1–2. *Carpel* 1, inferior, 1-seeded. *Fruit* berry-like.

Species 8, in S. Amer., andine.

KEY TO THE SPECIES.

A. Fruit not winged.
  *b*1. Fruit trigonal, not armed ; leaflets linear. *patagonicus.*
  *b*2. Fruit a white berry.
    c. Leaves bipinnate, with spinescent rachis ; segments linear. *pinnatus.*
    *c*2. Plant more prostrate and robust. Leaflets short, subequal. *microphyllus.*
*A*2. Fruit with 2 rigid broad wings, and intermediate pointed tubercles. Leaflets woolly. *clarazii.*
*A*3. Fruits 3–4-winged. Leaves with spinescent petioles. (*Tetraglochin.*)
  b. Leaflets small, ovate, setiferous. (*T. ameghinoi.*)
  *b*2. Leaflets long-oblong, mucronate. Wings of fruit broad. (*T. alatus.*)
  *b*3. Fruit tetragonal, angles spiniferous. Leaflets minute, subcordate. (*T. acanthocarpus.*)

1. M. CLARAZII J. Ball.

Small, with leaflets woolly underneath the adnate stipules, fimbriate-ciliate ; calyx silky. *Fruit* having 2 rigid pointed *wings*, with 2–3 intermediate, pointed *tubercles.* (The wings twice as large as the diameter of the fruit.)

Patagon. at Rio Chubut and southward.

2. M. MICROPHYLLUS Nied.

Near *M. pinnatus*, but prostrate and more robust. *Rachis* tomentose, rigid, subspinescent. *Leaflets* shorter and more equal.

N. Patagon.

3. MARGYRICARPUS PATAGONICUS Speg. (*M. setosus patagonicus* Speg.)

Prostrate, cespitose shrub, unarmed. Young *branches* long, densely leafy, in the axils of old, dry leaves. *Leaves* glabrous, odd-pinnate; the *leaflets* linear, acute, entire, revolute. *Fruit* trigonal, not winged, obovate, solitary in the axils.

Patagon., by Rio Negro; mouth of Rio Chubut; Golfo de San Jorge; R. de Sta. Cruz.

4. M. PINNATUS O. Ktze. (*M. setosus* Ruiz. & Pav.)

A low, stiff bush with pinnate *leaves*, and linear, pinnate *leaflets*. *Flowers* axillary, inconspicuous. *Fruit* a white berry, edible, at least in some varieties.

N. Patagon., by Rio Negro, and over most of the Andes. "Yerba de la perdiz." The "tinamou" eats it; and the natives call it the Silio Labuez or partridge-remedy. (J. Ball.)

10. TETRAGLOCHIN Poepp. (Sæpissime sub *Margyricarpus*).

Floral axis in the fruit dry, with 4 wings.

Species 3, Chili and Patagonia. (See key under *Margyricarpus*.)

1. T. ACANTHOCARPUS Speg. (*Margyricarpus acanthocarpus* Speg.)

Diffuse, densely branching shrub. Branches apically leafy with dense, glabrous, sheathing leaves, ciliate at their opening, odd pinnate. Leaflets 2–4 pairs, subopposite, minute, glabrous, subcordate, ovate. Flowers in 3's, sessile on apex of the peduncles, not exceeding the leaves, with broad, ovate, ciliate bracts. Sepals glabrous, elliptical-oblong. Fruit coriaceous, hispid-velvety, elliptic or ovate, tetragonal, with stout horizontal reddish spines on the angles.

Over all eastern Patagon. between Rio Chubut and Rio Sta. Cruz and Golfo de San Jorge.

Variable as to leaves, fruit and villosity. Spegazzini gives the following forms or varieties.

(1) *typica;* leaves glabrous; fruits not winged, white.
(2) *macropoda;* peduncles long, otherwise as (1).
(3) *lasiocarpa;* fruit villous, broad-winged.

(4) *dasycarpa;* leaves silky; fruit velvety, winged.
(5) *leiocarpa;* leaves pilosulous; fruit glabrous, winged, spinescent.

2. TETRAGLOCHIN ALATUM Gill. (*T. strictum* Pœpp.)

Fruticose, strict. Petioles very spinescent, broad at base. Young shoots very short, leafy; leaflets basally adnate, long-oblong, mucronate, revolute. Fruit with 3–4 broad, membranaceous wings.

(Bolivia); Patagon. In lofty mountains and pastures of the Andes. The wood is collected by travellers crossing the Andes.

3. T. AMEGHINOI Speg. (*Margyricarpus Ameghinoi* Speg.)

Strict undershrub, with subspinescent, spreading petioles, and short, leafy, axillary branchlets. Petiole very short, with ciliate pericladium. Leaf odd-pinnate, leaflets minute, subopposite, sessile, ovate, sharply setiferous, margin revolute; the lowest remote, entire; the upper approximate, 2–3-partite. Fruits solitary, sessile at the axils, glabrous, shining; 3-winged.

Patagon., by Golfo de San Jorge; Lago Musters; N. Patagon., by Lago Nahuel-huapi.

11. ACÆNA Vahl.

Herbs, often woody at base, glabrous or silky, often with erect scape-like floriferous stems, of the habit of *Sanguisorba*. Leaves unequally pinnate, with adnate stipules. Flowers in heads, or interruptedly spicate, green or reddish, bracted. Calyx-tube constricted at the throat, persistent; calyx-lobes 3–4. Petals none. Stamens 1–3, rarely more, in the calyx-throat. Carpels 2. Fruit-head armed with retrorsely barbed spines. Seed 1 to each flower.

Species 40, characteristic of extra-trop. S. Amer. with outlying species in Mexico, Calif., Hawaii Is., Tristan, S. Africa, S. Austral., Tasmania, and N. Zeal.

KEY TO THE SPECIES.

A. (*Euacæna.*) Flowers in globose or cylindric spikes, with solitary flowers lower on the scape.
  b. Plant smooth, shining. *pumila.*
  b2. Leaves silky-villous. *eupatoria.*
  b3. Leaves silky on the under surface.

c. Upper surface smooth. Fruit with large and small spines. *platyacantha.*
c2. Upper surface pubescent. Fruit glochidiate all round. *sericea.*
b4. Plant more or less pubescent.
c. Spines free, glochidiate.
d. Fruits smooth. *andina.*
d2. Fruits villous.
e. Leaflets entire or toothed, pubescent-setose.
f. Leaflets coarsely toothed towards the apex. *splendens.*
f2. Leaflets usually entire. *integerrima.*
f3. Leaflets 7–9 pairs, pinnatipartite; the segments narrow. *myriophylla.*
c2. Spines free, prismatic, rigid, basally enlarged.
d. Fruit about midway having 4 short spines. *multifida.*
d2. Fruit covered with spines.
e. Plants pubescent-setose, cinereous.
f. Fruits attenuate both ways. *fuegiana.*
f2. Fruits oval. Leaflets smooth on upper surface. *cuneata.*
e2. Plants green, pubescent or hirsute. Pinnæ pinnatifid.
f. Erect, silky. *pinnatifida.*
f2. Cespitose, villous. *pœppigiana.*
b5. Lax-pilose. Fruit tetragonal, with tubercles. Stamens 2. *lucida.*
b6. Silky. Fruit 3–4-angled, with 2–4 spines and smaller spines between. *trifida.*
A2. (*Ancistrum.*) Fruits in globose heads. At maturity each has 2–4 spines.
b. Plants pure green.
c. Leaflets serrate or coarsely toothed.
f. Leaflets silvery on lower surface. *argentea.*
f2. Leaflets pubescent or smooth on under surface.
g. Fruits covered by large, stout hairs appressed apexwards. *ovalifolia.*
g2. Fruit covered by white villi. *krausei.*
f3. Leaflets silky on both surfaces.
g. Fruit with 4 long, divaricate setæ. *cadilla.*
g2. Fruit slightly winged, with compressed glochidia. *philippi.*
c2. Leaflets pilose, 2-parted, minute. Calyx villous. Fruit unarmed. *parvifolia.*
c3. Leaflets 3–5-partite; segments unequal. *magellanica.*
c4. Leaflets 11, apically incised. Fruit small, with 4 short glochidia. *alboffii.*
c5. Leaflets about 11, pectinate, emarginate. Heads small.
d. Fruit with 4–2 short spines. *nudicaulis.*
d2. Fruit with 5 spines. *tenera.*
c6. Leaflets 4–6 pairs, pinnatifid, veiny, glabrous. Spines 4, spreading, twice as long as the calyx. (*lævigata*) *venulosa.*
b2. Plants glaucous or cinereous.
c. Fruits with spines subequal and yellowish.
d. Fruits smooth. *lævigata.*
d2. Fruits pubescent. *adscendens.*
c2. Fruits with midspines larger than the others. *macrostemon.*
b3. Plants densely pulvinate. Leaves 2–3, white, silky. Fruit with short glochidia all round. *pulvinata.*

*b*4. Silvery-silky, cespitose. Fruit with short spines. *cæspitosa.*

*A*3. Cespitose-silky. Flowers sexually dimorphous; the females hid in the leaf-axils. Fruit winged, with glochidia and spines. *tehuelcha.*

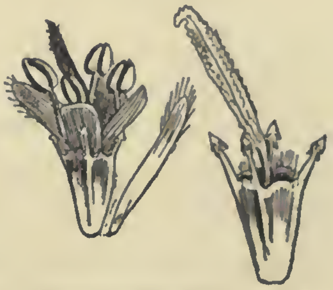
*A*4. Low. Leaflets 3–4, oblong-serrate, 6 mm. long; fulvous-hairy. *antarctica.*

1. ACÆNA ADSCENDENS Vahl.

Stem long, prostrate, sending up glabrous, leafy branches. *Leaflets* 4–7 pairs, ovate-oblong, obtuse, serrate. *Scape* leafy below, leafless and smooth above (rarely with a bract and glomerule midway); *head* globose; bractlets linear, apex ciliate. *Calyx* glabrous, its lobes oblong, pilose on outside. *Stamens* mostly 4, exceeding the calyx-lobes. *Stigmas* long, subplumose. *Fruit* obconical, with 4 long glochidia.

(Chili); Magellan (by Hatcher at Punta Arenas); Fuegia, passim; Falklands; N. Patagon., at Lago Nahuel-huapi. (Also in Australia and S. Georgia I.)

FIG. 74.



Acæna adscendens.—Flower and bract; calyx with glochidia and stigma: all magnified. (From *Flora antarctica.*)

A. ADSCENDENS MACROCHÆTA Franchet.

Taller. *Leaves* ovate-elliptical, with long-stalked, terminal part. *Setæ* 4 times as long as the pilose *capsule.*

Magellan; Cape Horn.

A. ADSCENDENS CORIACEA Small.

More robust and elongated than the type. *Leaves* narrower, oblong in outline, short-petioled, rigid; the winged base of the petiole produced into toothed auricles. *Leaflets* smaller.

S. Patagon., at Cape Fairweather, etc.

2. A. ALBOFFII (Alboff sine nomine) Macl.

Low, from thick rhizome, with old *leaves* about the base, branching into floriferous stems and sterile scions. *Stems* low, blackish, few-leaved, apically naked, subglabrous. *Radical leaves* short-petiolate, ovate-oblong, pubescent beneath, once-pinnate, with about 11 leaflets; these small, obovate-cuneate, apically cuneate-incised. *Head* solitary, large. *Stamens* 6. *Styles* long, plumose, blackish. *Fruit* small, *spines* 4, short-glochidiate.

Fuegia, alpine meadows above Ushuaia. N. Alboff.

3. ACÆNA ANDINA Phil.

Thick black *rhizome* bearing rosettes of pinnatipartite *leaves*, the parts pinnatifid, underneath and marginally setaceous. *Flowers* in a head or large spike. *Sepals* setose. *Fruit* glabrous, with subulate *spines*, twice as long as the fruit is broad.

(Chili, near snow); Patagon. (?).

4. A. ANTARCTICA Hook. f.

Low. *Stems* short, robust, prostrate, ascending, and sparsely branching. *Leaves* crowded, leaflets 3–4, broadly oblong, obtusely serrate, medially channeled, silky-villous above with tawny hairs, pilose underneath. *Peduncle* scapiform.

"I have not met with this small and very distinct species either in flower or fruit." (J. D. Hooker.) (A specimen so named in the Gray Herbarium has the head terminal and subglobular.)

E. and W. Magellan, Fuegia, passim, to Hermite I., and Cape Horn; Staaten I.

5. A. ARGENTEA R. & P.

Erect or ascending. *Leaves* numerous, 4–6 cm. long, with 4–6 pairs of coriaceous, ovate-oblong or lanceolate, serrate leaflets, dull green and smooth on upper surface, silvery-silky beneath. *Head* globose. *Bracts* linear. *Calyx* smooth. *Fruit* silky upwards, with 4 yellow *spines*.

Valdivia.

6. A. CADILLA Hook. f.

Stem prostrate, branching, the branches ascending, and petioles villous with spreading hairs. *Leaves* membranaceous, silky; leaflets broad ovate-oblong, obtuse, incise-serrate. *Peduncle* scape-like, the head globose. *Calyx* densely setose-pilose, its lobes villous outside. *Stamens* 2, filaments and anthers small. *Fruit* obconical, ending in 4 long, divaricate, filiform *setæ*. *Style* short, slender, plumose.

Vernacular name, "cadilla."

S. Chili. Patagon. (?).

7. A. CÆSPITOSA Gill.

Silvery-silky. *Leaflets* 3–4-jugous, the upper entire, the lower bi-trifid, segments linear, entire, small. *Flowers* in 1–2 capitula. *Fruit* ovoid, smooth and armed with short *spines*.

(Chili); Chubut, in dry hills near Nafofo-cahuellu. "Densely or laxly cespitose. Seems not to differ from *A. pulvinata* O. Ktze." (Speg.)

8. ACÆNA CUNEATA Hook and Arn.

Silvery-silky. *Stem* short, decumbent. Leaflets 4–7 pairs, obliquely obovate-cuneate, apically incise-dentate. *Scape* strong, with a few large, remote flowers, or globose-spicate. *Calyx-lobes* silky outside. *Stamens* 2, with long filaments. *Stigma* depressed. *Fruits* obovate tetragonal, or broad and then 2-seeded; *armed* all round by glochidia.

Magellan; S. Patagon., by Rio Coy (J. B. Hatcher, Dec. 18, 1896). Cape Gregory.

9. A. EUPATORIA Cham. & Schl.

Stem erect, spreading, silky-villous. *Leaves* oblong, oblique at base, incised, serrate, silky beneath (resembling *Potentilla anserina*). *Flowers* 2-staminate, small, sparse and glomerate in an interrupted spike.

(S. Brazil); N. Patagon., in dry regions by Rio Negro.

10. A. FUEGIANA Phil.

Stem erect, 20 cm. high. *Leaves* coriaceous, crowded at its base, *Leaflets* 4–6 pairs, cuneate; the apex deeply 3–5-toothed. Lower flowers in axils of small leaves; the others in a dense, ovate head. *Fruits* pubescent, angled, with 4–5 *aculei* on each angle; these short, glochidiate.

S. Patagon., by Rio Chico; Fuegia.

11. A. INTEGERRIMA Gill.

All silky-woolly. *Leaflets* 4 pairs, ovate-oblong, entire, or apically 2–3-toothed. *Heads* globose, one or a second remote. *Fruit* oval, with projecting *ridges* having very short *glochidia. Near A. splendens.*

(Cordilleras of Chili); S. Patagon., by Rio Chico and Sta. Cruz.

12. A. KRAUSEI Phil.

Plant smooth or pubescent, glaucous-green; ascending. *Leaflets* 4–5 pairs, obovate, toothed; smooth except underneath along the nerves. *Sepals* pubescent. *Anthers* purple. *Fruit* obovoid-cuneiform, white-villous, with 4 unequal *spines.*

Valdivia.

13. ACÆNA LÆVIGATA Ait.

Smooth, decumbent. Ascending branches leafy. *Leaflets* opposite, oblong, obovate, obtuse, oblique at base, crenate-dentate above, coriaceous, smooth on upper surface, hairy underneath. *Scape* with cylindrical terminal *spike*, and others globular. *Calyx* glabrous. *Stamens* 2, filaments short, *anthers* rounded. *Stigma* short, fimbriate. *Fruit* glabrous, compressed, with 4 erect, unequal *spines*.

Patagon., N. and S.; Magellan, Fuegia to Hermite I.; Falklands.

14. A. LUCIDA Vahl.

Loosely *pilose*. *Stem* long, decumbent, branching. *Leaflets* 8–9 pairs, 3–5-parted, villous beneath, the segments oblong to linear. Peduncles short, stout. *Spikes* ovate-oblong. Stamens usually 2. Fruit tetragonal with tubercles above on the angles, externally pilose.

Magellan, E. Fuegia (Ansorge, Dusén); Falklands, "on rocks near the sea."

15. A. MACROSTEMON Hook. f.

Stem rather simple, 30 cm. high, leafy. *Leaflets* 5–7 pairs, silky, mostly sessile, decurrent, crenate-toothed. *Scape* long, sparingly pilose, having a large, globose head. *Calyx* pilose, its lobes oblong-obovate, silky. *Filaments* long, anthers large, oblong. *Style* long, plumose. *Fruit* having 2 *spines* twice as long as the others.

(Chili; Mendoza); S. Patagon. by Puerto Deseado.

16. A. MAGELLANICA Vahl.

Abortively *diœcious?* *Stem* short, branches ascending. *Leaves* subcoriaceous, silky beneath. *Leaflets* 3–7 pairs, broad-ovate-oblong, obtuse, upper ones decurrent, crenate-serrate or cleft. *Scape* naked or rarely 1-leaved, pubescent. *Heads* small, dilated after flowering. *Calyx* broad, pilose. Stamens 4, long; *anthers* large, didymous. *Style* long, broad, plumose. *Spines* long, unequal, glochidiate.

Heads never divided. The hairy peduncles and broad styles distinguish it from *A. adscendens*.

Magellan, Cape Gregory, etc. S. Patagon., on pampas near Rio Coy. (Hatcher, in fruit Dec. 17, 1896.)

17. ACÆNA MULTIFIDA Hook. f.

Sparsely villous. *Root* woody. *Stem* slender, ascending, simple or divided upwards. *Leaves* broad-linear on slender petioles; leaflets numerous, pinnatifid, or 3–5 partite, the segments linear, obtuse, margins revolute; glabrous above, silky underneath. *Peduncles* 20–40 cm. high, villous, sparsely leafy. Flowers crowded most of them, in a globose head. *Calyx* hirsute, its lobes fuscous-purple, silky outside. *Stamens* 2, short. Stigma depressed, fimbriate. *Fruit* tetragonal, smooth, with *glochidia* dilated at their base, on the upper part.

S. Patagon., in the Cordilleras (Hatcher); Magellan, Fuegia, passim. A steppe plant, affecting dry parts. "Stouter than *A. pinnatifida*, fruits twice as large, spines broad downwards." (Speg.)

18. A. MYRIOPHYLLA Lindl.

Erect, 15 cm. high, pubescent. *Leaflets* 7–9 pairs, linear, pinnatipartite; segments narrow, silky beneath. *Spikes* cylindrical, interrupted at the base. *Fruit* ovate, tomentose, with glochidiate *spines*.

(Chili; Argentina); N. Patagon. Common about the bizcacha (Viscacha) warrens." (J. Ball.)

19. A. NUDICAULIS Alboff.

Erect, rough, branching, from a large rhizome. *Underground branches* covered by old leaves. *Leaves* radical, ovate to oblong, short-petioled. *Leaflets* 9–11, obovate-cuneate, pectinate, apex emarginate. *Head* small, 1 cm. in diameter, globose, blackish. *Stamens* 4 (and 2 staminodes), short. *Fruit* with 4 or 2 short *spines*.

Fuegia, Ushuaia; cultivated.

20. A. OVALIFOLIA Ruiz. & Pav.

Stems creeping. *Leaflets* 4–5 pairs, oblong, subcuneate, villous underneath. *Spikes* globose. *Calyx* densely covered with long hairs. *Stamens* mostly 2. *Fruit* villous, with 2–3 (–4) *glochidia*.

(Peru); S. Patagon. (Hatcher); Magellan. Fuegia to Cape Horn.

21. A. PARVIFOLIA Phil.

Much branching, decumbent; branches 7 cm. long. *Leaves* subradical, small (8 mm. long) pilose; *leaflets* minute, 2-partite. *Peduncle* filiform, short, with a terminal, globose *head* of about 12 flowers. *Calyx-segments* ovate, villous. *Fruits* unarmed.

E. Fuegia.

22. ACÆNA PHILIPPI Dusén. (*A. sericea* Phil. non Jacq.)

Cespitose, 24 cm. high. *Leaves* crowded, silky. *Leaflets* 5–7 pairs, ovate, deeply incised-serrate, larger towards apex of leaf. *Scapes* long, usually naked. Head globose. *Fruits* angular, slightly winged. *Glochidia* compressed.

E. Fuegia.

23. A. PINNATIFIDA Ruiz. & Pav. (Plate XIX.)

Erect, silky. *Leaflets* 3–5 pairs, deeply 3–5-parted, the segments linear. *Flowers* crowded in cylindrical *spikes*, the lower ones rather remote. *Stamens* 5–10. *Fruit* armed all around with *glochidia.*

(Chili); Magellan; S. Patagon., at head of Rio Sta. Cruz. (J. B. Hatcher. In fruit Feb. 9–25.) Golfo de San Jorge.

In some of the Hatcher specimens the leaflets are 8–9 pairs.

A. PINNATIFIDA GLABRATA Speg.

Upper surface of the *leaves* glabrous, obscurely fuscous-green, blackening when dry.

Patagon., by Rio Sta. Cruz.

24. A. PLATYACANTHA Speg.

Cespitose perennial. *Leaves* odd-pinnate, with 6–9 pairs of leaflets; the lower entire, the upper 1–2-partite, lanceolate, margin revolute, obtuse; silky-villous beneath, smooth above. *Scapes* subvillous, *capitate* with globose apex; also often with a few flowers or bracts lower down. *Fruit* tomentose, 2–4-angled, subulate, spinescent, the angles often with 2 superposed *spines;* armed in the sinuses with small *aculei.*

Patagon., by Magellan; R. Sta. Cruz, and Golfo de San Jorge.

A. PLATYACANTHA PARVIFOLIA Speg.

Leaves fasciculate at top, with a broad pericladium; *petiole* very short; *leaflets* 2–5 pairs, approximate, ovate, obtuse, mostly entire.

Patagon.; by Golfo de San Jorge.

25. ACÆNA PŒPPIGIANA Gay.

Villous, cespitose. *Stems* simple, strict. *Leaflets* 5–7 pairs, silky underneath, 5-partite, segments ovate-oblique. *Spike* interrupted, the lower flowers few, remote, the upper agglomerate. *Stamens* 2, short. *Stigmas* patelliform, fimbriate. *Fruits* very small, ovate-globose; *spines* pyramidal, unequal, sparingly glochidiate.

(Chili); by Hatcher in S. Patagon., on pampas near Coy Inlet. The leaves are crowded at the base, having many obscure lobes. The flowers are in a terminal, and 2–3 smaller subterminal spikes.

26. A. PULVINATA O. Ktze.

Stems many, short, densely pulvinate, 5–10 cm. high, at base covered by old sheaths, upwards having 2–3 white, silky *leaves*, each having 3–5 *leaflets;* these are trisect with subulate segments. *Petiole* 1 cm., with a basal sheath. *Scape* 3 cm., leafless, or 1-leaved, with 1 subulate bract. *Head* globose, 10-flowered. *Calyx-segments* white-silky, with long hairs. *Fruit* triquetrous-obovate, glabrous, with very short *glochidia* on all sides.

(Argentina); Patagon. (See *A. cæspitosa* Gill.)

27. A. PUMILA Vahl.

Glabrous. *Root* descending. *Stem* short, 3 cm., simple. *Leaflets* 10–12 pairs, small, obliquely ovate, obtuse, crenate-serrate, coriaceous, margins recurving. *Scape* with a slender spike. *Calyx-lobes* oblong-obtuse, pilose above. *Stamens* 4, short. *Fruit* with short *glochidia* all round. *Stigma* depressed, fimbriate.

"A pretty little species; with spike elongated."

Magellan, Desolation I., Fuegia to Hermite I.

28. A. SERICEA DC.

Leaflets obovate, incise-toothed, pubescent, silky underneath. Flowers in a crowded, cylindrical *spike*, on a decumbent stem. *Corolla* sympetalous, rotate. *Calyx* glochidiate all round. "*Fruit* elliptical, 6 by 3 mm., obscurely 3–4-gonal, *angles* minutely 1–4-spinuligerous, *faces* tomentosulous with sparing, minute aculei." (Speg.)

S. Patagon., at Puerto Deseado; by Rio de Sta. Cruz.

29. ACÆNA SPLENDENS Hook. & Arn.

Woolly-silky perennial. Root simple. *Stem* short, stout, covered by imbricating stipules. *Leaves* obovate; *leaflets* 7–9, obovate, 1–2 cm. long, sessile, apically many-toothed; *hairs* bronze-colored. *Scape* with apiculate, interrupted spike. *Fruit* oblong, with many spreading, long *spines* (glochidia).

(Chili); N. Patagon., by the Upper Limay, "apparently brought down by streams from the Andes." (J. Ball.) S. Patagon., by Rio Sta. Cruz; Magellan; at Punta Anegada. E. Fuegia. (Dusén.)

30. A. TEHUELCHA Speg.

Small, cespitose, *silky*. *Leaves* oblong, spatulate, pinnatipartite; the parts 2–5-cleft, and subdivisions oblanceolate. *Flowers* dimorphous, females concealed in axils of leaves; hermaphrodites seated on scapes. *Fruit* winged, with *spines* on margins, *glochidiate* on the angles, small on the faces.

S. Patagon., by Rio Chico and Lago Argentino. "Bark woody, densely coated with blackish scales (remains of old leaves)."

31. A. TENERA Alboff.

Low, corticated, with clear, green *leaves*. *Rhizome* long, rough, branching, stoloniferous. *Leaves* radical, long-petioled, narrow-oblong. *Leaflets* 9–13, ovate-orbicular, membranous, pectinate-emarginate. *Scape* with small, globose *head* (7–5 mm. diam.) *Calyx* glandular. *Spines* 5.

Fuegia.

32. A. TRIFIDA Ruiz. & Pav.

Silky-villous. *Caudex* woody; stem erect, 1 meter high. *Leaves* mostly crowded at base. *Leaflets* about 6 pairs, oblong-ovate, 4–8 mm. long, pinnatifid into 3 or more segments. *Flowers* greenish, in a cylindrical spike, some remote. *Calyx-lobes* exceeding the tube. *Anthers* dark-purple. *Fruit* 3–4-angled, angles armed with 2–4 stout *spines*, and smaller spines between.

(Calif. to Chili); by Hatcher on pampas near Coy Inlet, S. Patagon.

Torrey & Gray referred the Californian plant to *A. pinnatifida;* but see *Botany of Calif.*, by Brewer & Watson, i, p. 186.

33. ACÆNA VENULOSA Griseb. (= *A. lævigata* Ait.?)

Branches ascending, leafy below, rather glabrous, *1-headed.* *Leaflets* 4–6 pairs, cuneate or subrotundate, obovate, pinnatifid-crenate upwards, coriaceous, veiny. *Calyx* glabrous, its segments and the bracts hairy. *Stamens* 2, short, anthers round. *Stigma* short, dilated, fimbriate. *Spines* 4, spreading, twice as long as the calyx.

Magellan. "I cannot find any difference between *A. lævigata* Ait. and *A. venulosa.* In both the spines are alike elongated, and the divisions of the calyx are ciliate." (A. Franchet.)

11. PRUNUS Linn. (including *Cerasus*). Plum, Cherry.

Trees or shrubs, mostly with edible *drupes*, and simple, serrate, petiolate *leaves*, which are conduplicate or convolute in the bud. *Stipules* small, fugacious. *Flowers* perigynous, carpel usually 1. *Seed* 1, suspended.

Species 90, natives of N. Temp. Amer. and Asia; now cultivated in all temperate regions.

1. P. CAPRONIANA (DC. sub *Cerasus*).

A small tree, with spreading branches, flowers subcoëtaneous with the leaves. *Calyx* broad-campanulate; the peduncle thickish, not long. *Fruit* globose-depressed; the suture scarcely depressed. *Epicarp* not adhering to the mesocarp, which is mostly acid, and styptic.

P. CAPRONIANA GRIOTTA.

Fruits globose-depressed, black-purplish, the *flesh* red.

N. Patagon., along Rio Negro (introduced).

2. P. CERASUS L. Cherry.

Tree, with nearly sessile *umbels*, the calyx-tube turbinate, the segments crenate-serrate, obtuse. *Leaves* not drooping, oblong-obovate to ovate-lanceolate.

(Cultivated in temperate climates); Patagon., (escaped).

Family 52. LEGUMINOSÆ. Pea Family.

Plants of various habits, with usually *alternate*, *stipulate*, mostly compound *leaves;* irregular (papilionaceous) or regular, inferior or sub-perigynous, *flowers*, with the *odd sepal* anterior; and monocarpellary *ovary*, becoming a *legume*. *Endosperm* usually none; *cotyledons* large, fleshy.

Species exceeding 7,000, many cosmopolitan. Some species are characteristic of particular regions; especially of Australia, which is headquarters of the family.

The following *subfamilies* are sometimes regarded as distinct families.

I. MIMOSEÆ: p. 488.

Leaves bi-tri-pinnate or reduced to phyllodes. *Flowers* regular; the *calyx-lobes* and *petals* valvate. *Stamens* isomerous with the perianth-divisions, or commonly numerous.

II. CÆSALPINIEÆ: p. 491.

Leaves simple, or simply- or bi-pinnate. *Flowers* more or less irregular; the *posterior petal* enclosed by the lateral petals. *Stamens* 10, or fewer, distinct or united.

III. PAPILIONACEÆ: p. 495.

Leaves simply compound, rarely simple. *Flowers* papilionaceous; the *posterior petal* enclosing the lateral petals. *Stamens* 10, mon- or diadelphous or distinct; rarely 9 or 5.

KEY TO THE GENERA.

A. Flowers regular. Petals and sepals valvate. Stamens as many, or twice as many as the petals. Trees or shrubs with bipinnate leaves, sometimes reduced. (MIMOSEÆ.)
  b. Anthers glandless. Pod flat, its valves at length separating from the persisting sutures. 1. *Mimosa*, p. 488.
  b2. Anthers with a deciduous gland. Pod convex, straight or twisted. Seeds with endosperm. Petals united. 2. *Prosopis*, p. 489.
AA. Flowers zygomorphic; the petals imbricate.
  B. Flowers not papilionaceous; posterior petal internal. Calyx-segments almost or quite separate. (CÆSALPINEÆ.)
    c. Leaves even-pinnate. Stamens 10 or 5. Anthers basifixed, opening terminally. 3. *Cassia*, p. 491.
    c2. Leaves bipinnate. Stamens 10, subequal. Anthers opening laterally. Ovary free. Flowers racemose or panicled.
      d. Calyx-lobes valvate in the bud. Pod sessile, many-seeded. Leaflets in many pairs. Unarmed trees with handsome flowers. 4. *Poinciana*, p. 492.
      d2. Calyx-lobes long and subequal, nearly valvate. Pod sessile, flat, 2–many-seeded. Low, gland-punctate herbs or undershrubs. 5. *Hoffmanseggia*, p. 493.
      d3. Calyx-lobes imbricate in the bud.
        e. Pod 1-seeded, with long bristles, slightly stalked. Viscous shrub. 6. *Zuccagnia*, p. 494.

*e*2. Pod 2–many-seeded, sessile. Stigma capitate or concave. Trees or climbing, often thorny shrubs. 7. *Cæsalpinia*, p. 494.

BB. Flowers papilionaceous; posterior petal external (called the *vexillum*, the lateral petals are the *alæ*, and the anterior pair form the *carina*). (PAPILIONACEÆ.)

c. Filaments free. Leaves odd-pinnate (rarely reduced to spines). Flowers racemose. Pod 3–many-seeded. Mostly shrubs.

d. Pod sessile or nearly so, indehiscent, drupe-like. Petals long-clawed, golden. Thorny shrubs. 8. *Gourliæa*, p. 495.

*d*2. Pod short-stiped, constricted between the seeds, indehiscent or dehiscing late. Petals subsessile, white or yellowish. Leaflets sometimes stipellate. 9. *Sophora*, p. 495.

*c*2. Filaments united, monadelphous or diadelphous. Pod 2-valved or indehiscent. Leaflets without stipels.

d. Leaves simple or digitately 3–5 foliolate, or reduced. Mostly shrubs.

e. Stamens monadelphous, staminal tube open dorsally. Stigma incurved, smooth inwards. Pod with convex valves, few-seeded. Leaves entire or 3-cleft often spinescent, with connate, ochreate stipules. 10. *Anarthrophyllum*, p. 496.

*e*2. Stamens monadelphous, staminal tube closed.

f. Seeds non-strophiolate. Calyx-lobes, 2–3, much exceeding the calyx-tube. Alæ dorsally coalescing at apex. Leaves simple or digitately 5–∞-foliolate, with adnate stipules. 11. *Lupinus*, p. 498.

*f*2. Seeds strophiolate. Calyx deeply 2-cleft, coriaceous, colored. Leaves reduced to spines or scales. 12. *Ulex*, p. 499.

*d*2. Leaves 3-foliolate, the leaflets denticulate. Stamens diadelphous, the vexillary being free entirely or half-way. Anthers all similar. Carina obtuse. Herbs. (TRIFOLIEÆ.)

e. Corolla deciduous after anthesis. Claws of petals free. Pod indehiscent or follicular. Leaves pinnately trifoliolate.

f. Flowers in heads or short racemes. Pod spirally coiled, or reniform, or broad-oval and curved. 13. *Medicago*, p. 500.

*f*2. Flowers in long, spike-like racemes. Pod thick, almost globular or ovoid, 14. *Melilotus*, p. 501.

*e*2. Corolla usually drying and persisting after flowering. Flowers in heads or umbels. Pod straight, rather short. Claws of all, or of the paired petals. adnate to the staminal tube. 15. *Trifolium*, p. 501.

*d*3. Leaves pinnate.

e. Rachis of leaves without a terminal bristle or tendril. Pod dehiscent, with no hypogynous disk. Filaments filiform. Seeds non-strophiolate. Mostly herbs or undershrubs.

f. Seeds numerous. (GALEGEÆ.)

g. Stamens monadelphous, with the staminal tube closed. Racemes rarely in the axils. Fruit stiped, with a cup-like disk inside the staminal tube. Carina not spiral. Style smooth. Glabrous herbs. 16. *Galega*, p. 502.

*g*2. Vexillary stamen free or partly united. Inflorescence axillary. Pod more or less inflated, usually 2-celled lengthwise, or nearly so.

Style smooth, rarely pencilled around the stigma (*Astragalinæ.*) Anther-cells distinct. Pod (not prickly, often stiped) 2-celled, or if 1-celled, then globular or ovoid, rarely flat. Carina obtuse. (Flowers rarely yellow, often violet to pink.) Leaves mostly odd-pinnate. 17. *Astragalus*, p. 502.

*f*2. Seeds few; pod short. Diadelphous, vexillary stamen free.

g. (Section of *Astragalus?*) Calyx turbinate, sessile. Leaves even pinnate, ending in a spine; stipules adnate. Pod 1-celled, usually 1-seeded. White-haired, thorny shrub. 18. *Tragacantha*, p. 508.

*g*2. Anther-cells fusing towards their apex. Pod rather thick, prickly. Leaves odd-pinnate, glandular hairy. 19. *Glycyrrhiza*, p. 509.

*g*3. (*Phaseoleæ.*) Leaves pinnately 3-foliolate, without stipels or tendrils. Carina apically incurved, falcate. Pod 2-seeded, flat, curved. Style not bearded; calyx not enlarging in the fruit. Yellowish flowers mostly in axillary racemes. Leaves resinous-dotted underneath. 23. *Rhynchosia*, p. 531.

*e*2. Rachis of leaves with a terminal bristle or a tendril. Vexillary stamen free or partly united in a staminal tube. Pod more or less compressed. Herbs with axillary flowers or racemes. (VICIEÆ.)

f. Staminal tube obliquely truncate. Style slender, apically tufted. Pod with several, or only 2 seeds. 21. *Vicia*, p. 521.

*f*2. Staminal tube evenly truncate. Style broadening upwards, bearded along the inner side. Seeds several. 22. *Lathyrus*, p. 526.

*c*3. Filaments free, the uppermost pair basally broad, and often adnate to the carina. Pod mostly with a straight upper and incurved lower suture, indehiscent, or dehiscing by the upper suture. Herbs or undershrubs, often armed terminally. Leaves pinnate, leaflets mostly numerous rarely only 3; no stipels. Racemes or panicles terminal. 20. *Patagonium* (*Adesmia*), p. 509.

Subfamily *I. MIMOSEÆ.*

1. MIMOSA Linn.

Leaves bipinnate, often sensitive, sometimes reduced to phyllodes. Flowers small, sessile, regular, in heads or spikes; stamens usually numerous. Calyx small, or pappus-like. Legume with its 2 valves separating from a persisting septum.

Species 300, most in tropical and subtropical America. A few in S. Asia and Africa. Not in Australia, except *M. pudica* L.

M. ROCÆ Ltz. & Nied.

A woody, decumbent shrub, unarmed, but tomentose, with stellate wool. Leaves with 2 pairs of pinnæ, the common petiole ending in a stipuliform blade. Pinnæ with 8–11 pairs of leaflets, and the rachis prolonged. Leaflets broad-elliptical, or elliptic-lanceolate. Flower-heads axillary, peduncled, globose, 15–17-flowered; one head on the peduncle. Flowers 4-merous, 4 mm. long. Legume 1–4-seeded, in joints.

(Sierra de la Ventana, near Bahia Blanca); N. Patagon.

2. PROSOPIS Linn. Algaroba.

Trees or shrubs, with bipinnate *leaves*, spinose or unarmed; and small, regular, 5-merous flowers in *heads* or *spikes*. *Petals* united halfway. *Anthers* mostly with a deciduous gland. *Legume* straight or twisted, with internal cross-septa.

Species 30, curious both in structure and distribution. Most of the species are in S. Amer., 10 of these in Argentina, and several in Patagonia; also 4 species in Mexico, Texas and Calif., 1 in trop. Africa; 1 in the Caucasian and Himalayan regions.

Some species, as *P. dulcis* and *P. horrida* of Peru, have pods with sweet mucilage, and form "pastures" which serve as food for cattle. The Mesquit-tree of Texas, *P. juliflora* DC., yields gum, and is valuable for its hard wood.

KEY TO THE SPECIES.

a. Legume straight or falcate.	
b. Leaves abortive or rudimentary. Spines axillary.	*humilis.*
b2. Leaf-pinnules 1 pair. Extra-axillary spines.	*patagonica.*
b3. Pinnules 2–3 pairs. Apically spinescent.	*striata.*
b4. Pinnules 2–3 pairs. Branches flexuose.	*denudans.*
b5. Pinnules 6–12 pairs. Stipular spines.	*campestris.*
b6. Pinnules 13–20 pairs. Stipular spines.	*siliquastrum.*
a2. Legume contorted.	*strombulifera.*

1. P. CAMPESTRIS Griseb. Algaroba.

Shrub, tortuosely intertwined, hirtellous. *Stipular* spines strong, at length exceeding the fasciculate leaves. *Pinnæ* 1, rarely 2 pairs, with minute glands between, opposite the dorsal stipel. *Leaflets* 6–12 pairs, approximate, minute, oblong-linear, obtuse, pilose-margined. *Spikes* lateral, briefly oblong-cylindric. Pale yellow *corolla*, puberulous at base. *Pod* long, 7–11-seeded.

(Argentina); Patagon.

2. Prosopis denudans Benth.

Branches short, flexuose, they and the *leaves* puberulous. Leaves fasciculate, with glabrous petioles. *Leaflets* 2–3 pairs, small, oblong-linear. *Spikes* peduncled, oblong. *Petals* woolly inside. *Anthers* ovate. *Legumes* villous, long-falcate.

Patagon., by Rio Chubut.

3. P. gillesii (sub. *Poinciana*).

4. P. humilis Gill.

Undershrubs, with angulate, sulcate branches, and striate, glabrous branchlets. *Spines* (abortive branchlets) axillary, solitary or paired, soft, long, striate. Stipules minute, subulate. *Leaves* abortive, or reduced to a glanduliferous, 1–2-foliolate, small petiole, ending in a bristle. *Leaflets* small, lanceolate, acute. *Spikes* solitary on the peduncle, cylindraceous, glabrous, branching towards the middle. *Anthers* glanduliferous or naked. *Legume* compressed, falcate. *Flowers* and pods scarlet to purplish.

(Chili); N. Patagon, near head of Rio Negro.

5. P. patagonica Speg.

Fruticose, with spiniform, extra-axillary, stout, solitary branches. *Leaves* fasciculate at the nodes, twice-dichotomous. Leaflets 1 pair, spatulate, thickish. *Spikes* cylindric, the peduncle exceeding the leaves. *Flowers* green; calyx glabrous, short, scarcely toothed. *Corolla* glabrous outside, villous within.

Patagon., by Golfo de San Jorge.

6. P. siliquastrum DC.

Fruticose, subglabrous. Branches long, subflexuose. *Stipular spines* solitary or paired, strong. *Fascicles* of spikes and leaves proceeding from the same tubercles. *Pinnæ* 1 pair, often with an odd one; *leaflets* 13–20-pairs, narrowly linear-obtuse.

S. Patagon.; N. Patagon., near Rawson.

7. P. striata Benth. (*Mimosa striata* Speg.)

Glabrous. Branches thick, with yellow ribs, apically spinescent. *Leaves* few; *stipules* spinescent, recurved. *Pinnæ* 1 pair; pinnules 2–3 pairs, oblong. *Peduncles* exceeding the leaves. *Heads* globose. *Flowers* greenish. *Calyx* minutely 4-toothed. *Petals* long, glabrous. Stamens 10. *Ovary* villous. *Pod* lomentaceous, at length articulately deciduous.

N. Patagon., by Rio Negro.

8. PROSOPIS STROMBULIFERA Benth.

Glabrous. With *stipular* spines, or unarmed. *Leaflets* of pinnæ 4–6 pairs, alternate or opposite, linear, obtuse; a gland between some of the pinnæ. *Legume* terete, spirally contorted. (Fig. 59, A, B, in Eng. & Prantl, iii, 3, p. 104.)

(Peru; Chili. Cultivated in gardens as medicine for tooth-ache. "Retorturio.") N. Patagon., by Rio Negro.

Subfamily *II. CÆSALPINEÆ.*

3. CASSIA Linn.

Leaves equally pinnate. *Calyx-tube* very short, its lobes subequal, imbricate. *Corolla* nearly regular, mostly yellow. *Stamens* 10 or 5, unequal; anthers opening by pores. *Seeds* numerous.

Species 275, mostly in warm and temperate regions.

KEY TO THE SPECIES.

a. Leafless.	*aphylla.*
*a*2. Leaflets 3–6 pairs; and	
b. Oval, acute.	*glauca.*
*b*2. Broad-ovate, retuse.	*lorentzii.*
*b*3. Cuneate-obovate, retuse.	*arnottiana.*

1. C. APHYLLA Cav.

Fruticose, branches dichotomous, terete, glabrous, leafless, nearly a meter high. Branches rather thick, greenish-yellow. *Flowers* in terminal *racemes*, alternately paired, on separate pedicels. *Calyx-leaves* ovate, 3 outer pilose. *Corolla* saffron, twice as long as the calyx; *petals* ovate. *Pod* flat, linear, 10 cm. long, 3 mm. broad. *Seeds* numerous, on capillary funicles.

(Argentina); Patagon., shrubberies, "an important occupant of the fields of Patagonia, as well as on the mountains."

CASSIA APHYLLA DIVARICATA.

N. Patagon., by Rio Negro.

2. C. ARNOTTIANA Gill. & Hook.

Fruticose, small, glabrous, naked below. *Leaflets* 4–5 pairs, thickish, glaucous, cuneate-obovate, retuse; a subulate gland between the lowest pair. *Raceme* twice as long as the leaves, 2–3-flowered. *Legume* oblong, coriaceous, thick, compressed. Sutures tumid.

(Chili); N. Patagon., by Lago Nahuel-huapi.

3. C. GLAUCA Lam.

Shrub, about 1.5 meters high. *Leaflets* 4–6-pairs, oval, acutish, glaucous, an oblong, sessile gland between the 3 lowest pairs. *Stipules* linear, subulate, spreading. Legumes linear, straight, mucronate.

(East Indies); Patagonia (?).

4. C. LORENTZII Nied.

Shrub 30–100 cm. high, erect, glabrous, naked below, scarred, branches and branchlets reticulate, green when young, becoming olive. *Leaflets* 3–5 pairs, opposite, thickish, broad-ovate, retuse, or with nerve produced; entire, subsessile, green; a subulate gland between the lowest pair. *Stipules* lanceolate, acutish. *Racemes* twice as long as the leaf, 2–5-flowered. *Legume* sessile, oblong, coriaceous, thick, compressed, with tumid sutures 60 mm. long, gray-fuscous. *Seeds* numerous, mostly horizontal, suborbicular, compressed, with prominent brown hilum.

N. Patagon., by Rio Negro.

4. POINCIANA Linn.

Trees, having bipinnate *leaves*, with many small leaflets and terminal racemes of orange or red flowers. *Calyx-tube* short or obsolete, segments valvate, subequal. *Petals* orbicular, subequal, or the posterior differing. *Stamens* 10, free, hairy at base, inflexed above. *Ovary* sessile, many-ovulate; the *stigma* truncate, ciliolate. *Legume* elongate, internally constricted between the seeds. *Seeds* transverse, oblong, having endosperm; radicle exserted.

POINCIANA GILLESII Hook. (Wall, sub *Cæsalpinia.*)

Shrub, more than 1 meter high, *unarmed*, with numerous small, oblong leaflets. *Petals* glandular, toothed-ciliate at their apex. *Legume* cimeter-form, glandular, 1-celled, dry. *Flowers* sulphur-colored, with a sickly odor (supposed to injure the eyes).

(Chili: Uruguay); N. Patagon., by Rio Negro; also cultivated.

5. HOFFMANSEGGIA Cav.

Herbs or low shrubs, with glandular-punctate, bipinnate *leaves* and *racemes* of yellow, nearly regular flowers. *Calyx-segments* 5, subequal. *Petals* 5, imbricated. *Stamens* 10, anthers opening by slits. *Pod* flat. *Seeds* numerous.

Species 20, chiefly in S. Amer., and northwards to California and Mexico; 1 in tropical Africa.

1. H. FALCARIA Gay.

Herb, not black-pitted, but with stalked glands. *Stipules* ovate. *Pinnæ* 7–11. *Pinnules* 12–21, oblong. Racemes few-flowered. *Legume* linear-oblong, curved or nearly straight, 8–12-seeded.

(By Andes to N. Amer.); N. Patagon., high plains along Rio Negro.

2. H. PATAGONICA Speg.

Low, subglabrous. Radical and cauline *leaves* similar; pinnæ 3–4 pairs and terminal; on long petiole. *Leaflets* 4–5 pairs, minute, ovate. *Scape* glabrous, sparsely racemose. *Flowers* mid-size. *Calyx* purple. *Corolla* yellow. Legume glabrous.

N. Patagon., high plane near Trelew.

3. H. TRIFOLIATA Cav.

Nearly stemless. *Pinnæ* 3; *leaflets* ovate, tomentose. *Legumes* erect, villous (glabrous here, Speg.).

Patagon., passim.

H. TRIFOLIATA PENTAPHYLLA Speg.

Leaflets 5, some 3. *Stipules* ovate, acutish; they and the *leaflets* elliptic-subovate, nervulose.

N. Patagon., at confluence of Limay and Neuquen.

6. ZUCCAGNIA Cav.

Glutinous shrubs, with even-pinnate *leaves*, and small, caducous *stipules*. *Leaflets* small, coriaceous. Terminal *racemes* of yellow flowers, having very short *calyx-tube*, and subequal segments; *stamens* 10, free, bent down, filaments hairy at base. *Ovary* short-stalked, 1-seeded. *Legume* short, flat; the *seed* pendent.

Only species:

Z. PUNCTATA Cav.

Leaflets 7–8 pairs, alternate, elliptic, glutinous, punctate.

Shrub over 1 meter high, with tortuose branches.

(Mountains of Chili); N. Patagon.

7. CÆSALPINIA Linn.

Trees or climbing shrubs, sometimes spinescent, with bipinnate *leaves* and racemose, yellow or red *flowers*. *Calyx-tube* short, its lowest segment often large. *Stamens* 10, declined, anthers all similar, dehiscing by slits. *Legume* short, compressed, coriaceous, 2-valved, or thick and indehiscent, often septate. Seeds few.

Species 40, in warm parts of both hemisperes.

1. C. GLAUCA (Ort. sub *Larrea*) O. Ktze. (*Hoffmanseggia* DC.)

Root creeping, here and there tuberous. *Stem* decumbent, scarcely suffruticose. *Leaflets* 3–6 pairs and terminal, ovate-oblong, glaucous. *Pods* falciform.

(Boliv.; Argent.); Patagon.

C. GLAUCA ANDINA Phil.

Depauperate, nearly stemless.

(Bolivia); Patagon.

C. GLAUCA PAUCIGLANDULOSA O. Ktze.

Glands sparse, or none, or confined to the inflorescence.

Patagon.

2. C. PRÆCOX Ruiz. & Pav.

Tree. Petioles of the even-bipinnate *leaves*, ending in a spine. *Pinnæ* 3 pairs, each having 5–7 pairs of small, emarginate leaflets. *Stipular* spines strong, conical. *Legumes* straight.

(Chili); N. Patagon. by Rio Negro.

Subfamily *III. PAPILIONACEÆ.*

8. GOURLIÆA Gill.

Shrub, with spinescent branches, odd-pinnate *leaves* with many small *leaflets*, and short, racemes of small, golden flowers, crowded at the nodes. *Calyx* with its two upper lobes truncate, subconnate. *Petals* long-clawed; the standard broad orbicular; the keel shorter than the wings, obtuse. *Stamens* free or united at the base. *Ovules* numerous; but *legume* short, subdrupaceous, with only 1 or 2 seeds.

Only species:

G. DECORTICANS Hook. & Arn.

Nearly 2 meters high; bearing edible *drupes* which form the chief food of the Indians of the Grand Chaco. "Chanar."

(Fig. G in Eng. & Prantl, iii, 3, p. 196.) (Argentina); N. Patagon. by the Rio Negro and Limay.

9. SOPHORA Linn.

Mostly shrubby, with unequally pinnate *leaves*, having many small, or few large, *leaflets*, often with *stipels;* and white to yellow or bluish-violet *flowers* in panicled *racemes. Bracts* small or none. *Calyx-teeth* short. *Standard* broad, rounded, mostly shorter than the rather straight keel. *Wings* long, oblique. *Stamens* free or rarely united at base. *Legume* shortly stiped. *Style* bent, with small, terminal stigma. *Fruit* terete or slightly compressed, contracted between the numerous seeds, indehiscent or at length dehiscing. *Seeds* ovoid to globular.

Species 25, most in warm climates.

Section *Edwardsia* has legume 4-winged, with eight species (E. Indies, N. Zeal.; Hawaii and Andina).

S. TETRAPTERA J. Mill. (*Edwardsia macnabiana* Graham.)
(*E. grandiflora* Salisb.)

A *tree* of variable habit. Branches of the young slender and flexuose, of the old straight, with fulvous, silky hair. *Leaves* exstipulate, 13–15 cm. long, the petioles slender, stout and silky or rusty; *leaflets* 6–40 pairs, varying from broad-obcordate to linear-oblong, retuse or 2-lobed; in the young smaller, broader, glabrous. *Flowers* 25–50 mm. long, yellow, on axillary, 4–8-flowered racemes. *Calyx* silky, gibbous, its mouth oblique. *Standard* short, obtuse, scarcely reflected. *Legume* 3–12 cm. long, its joints oblong, 4-angled and 4-winged. *Seeds* oblong, pale yellowish brown; cotyledons very consolidated.

A large and a small variety in New Zealand, abundant; the small form is also common in Juan Fernandez and S. Chili.

10. ANARTHROPHYLLUM Benth.

Branching, somewhat silky, rigid shrubs. *Leaves* small, entire or 3-cleft, mostly spinescent, united below with the stipules into a ring. *Flowers* solitary at the ends of the branches, reddish-yellow. *Calyx* tubular, its 2 upper lobes free; its 3 lower lobes united into a lip. *Wings* oblong. *Keel* obtuse, once plaited on each side. *Stamens* all connate in a sheath, open above; anthers alternately long-basifixed, and short-versatile. *Ovary* subsessile, ovules few. *Style* incurved, glabrous, with capitate stigma. *Legume* obliquely ovate-cuspidate, or narrow, compressed.

Species 8, extra-tropical S. Amer.

KEY TO THE SPECIES.

The species with petiolate, silky, trisect leaves, having spinose, subulate, segments are chiefly as by O. Kuntze:

a. Petals pilose externally, exceeding the calyx.
    b. Leaf-segments, 5–10 mm. long.
        c. Calyx, lower lip tridentate. *bergii* Hier.
        c2. Calyx, lower lip trisect. *rigidum* Hier.
    b2. Leaf-segments 10–20 mm. long.
        c. Calyx, lower lip tridentate. Petals subequal, erect. (*Genista elegans.*) *elegans* Ph.
        c2. Calyx, lower lip trisect, with subulate segments.
            d. Petals orange, unequal, wings and keel straight, about twice as long as the vexillum. *morenonis* O. Ktze.
            d2. Petals yellow, subequal, keel deflex. *toninii* O. Ktze.
    b3. Leaves and stipules ovate, mucronate, spinulose, silky. Flowers yellow. *subandinum* Speg.
a2. Petals glabrous externally, scarcely exceeding the calyx. *beaufilsii* O. Ktze.
a3. Standard broad, only half as long as the wings. *desideratum.*

The genus is divisible into two subgenera: (1) *Amerophyllum*, with entire leaves; (2) *Trimerophyllum,* with trifid or tripartite leaves.

1. ANARTHROPHYLLUM BEAUFILSII O. Ktze.

Petals glabrous externally, scarcely exceeding the calyx-lobes. *Calyx* tomentose; its lower lip produced, 3-toothed. Wings and keel produced, twice as long as the standard.

Patagon., by Sta. Cruz.

2. A. DESIDERATUM Benth. (DC. sub *Genista.*)

Trimerophyllum. Branches *unarmed*, terete. *Leaflets* 3, linear-subulate, apically pungent, appressed-pubescent, silky. *Flowers* pediceled. *Standard* broad, only half as long as the wings. *Legumes* pubescent.

Varies in size of leaf-segments, degree of silkiness, etc., and may reach nearly 3 meters high. "Not sufficiently known," O. Ktze. (= *A. bergii* Hier. ?)

S. Patagon., Puerto Deseado. By Hatcher at Rio Sta. Cruz. Fuegia. Flowering Nov. 21; by Rio Chubut and Rio Gallegos.

Under *A. desideratum*, Speg. gives 3 forms.

(1) *bergi* or *typica;* lobes of leaves 5–10 mm. long; lower lip of calyx, briefly 3-toothed.

(2) *merenonis*, lobes of leaves 10–20 mm., lip of calyx 3-cleft to the middle.

(3) *mustersi* Speg., lobes of leaves 15–35 mm., lip of calyx 3-partite to the base.

3. A. ELEGANS Benth. (Gill. sub *Genista.*)

Trimerophyllum. Leaves 3-partite, their segments elongate-subulate, canaliculate, acute, pungent, spinescent, appressed-silky. *Stipules* as long, lanceolate, united at base. *Corolla* twice as long as the calyx. *Legumes* linear-lanceolate, silky, 5–6-seeded, the valves at length spirally twisted and glabrous. Beautiful scarlet, paler *in sicco.*

N. Patagon. S. Patagon., by J. B. Hatcher, in dense tufts, 2–3 feet in diameter; (by Barnum Brown, Nov. 10, 1899).

4. A. MORENONIS O. Ktze.

Petals orange, unequal. Standard only half as long as the other petals.

Patagon. (M. & T.)

5. A. RIGIDUM (Gill.) Hieron.

Trimerophyllum. *Leaves* and buds bitter, pale green. *Leaf-segments* long cuspidate-mucronate. *Flowers* orange, on a small, silky-canescent pedicel, sessile in 2's or 3's. Lower *calyx-segment* longer, 3-toothed. *Standard* greatly exceeding the wings, dorsally hoary.

N. and S. Patagon.

6. ANARTHROPHYLLUM SUBANDINUM Speg.

Amerophyllum. Low, perennial, densely fastigiate, branching, silky-silvery. *Leaves* not divided, rigid, crowded. *Stipules* ovate to ovate-lanceolate, equalling the scarcely narrower limb, and like it mucronate-spinulose. *Flowers* acrogenous, solitary; *calyx* hoary-silvery, trifid, the lower lip 3-toothed, as long as the concolorous pedicel. *Corolla* twice as long, yellow, the standard equalling the wings and keel. *Legume* sublinear-lanceolate, appressed, silvery-silky, its valves after dehiscence spirally twisted.

Chubut, in dry hills near Nafofo-cahuellu.

A. SUBANDINUM NAHUELHUAPIENSIS Speg.

Stouter than the species, 40–70 cm. high, branches long, slender. *Leaves* on ends of branches relaxed, and *flowers* solitary in their axils.

Patagon., in rocky hills by Rio Collon-curá.

7. A. TONINII O. Ktze. (*A. rigidum toninii* Speg.)

Petals yellow, subequal, pilose; keel deflexed, mostly taller than the type (1–150 cm.), *leaf-segments* longer than in *A. rigidum*, but not separable.

Patagonia, near Trelew and near Lago Nahuel-huapi.

11. LUPINUS Linn. Lupine.

Herbs, with digitate *leaves*, stipules adnate to the petioles, and with terminal *racemes* or spikes of showy flowers. *Calyx* deeply 2-lipped. Sides of *standard* reflexed. *Keel* falcate, pointed. *Stamens* 10, monadelphous; anthers alternately longer and shorter. *Pod* flat, often narrowed between the seeds.

Species 100, in temperate and warm regions.

1. L. BRACTEOLARIS Desrouss.

Annual, with ovate-lanceolate *stipules*, and obovate-oblong *leaflets*, villous on both sides. *Flowers* alternate, pediceled, bracteolate. Upper calyx-lip bipartite; lower 3-cleft.

(Montevideo.)

LUPINUS BRACTEOLARIS DEPAUPERATUS O. Ktze.

Nearly stemless, scarcely 8 cm. high.

Patagon.

2. L. CRUCKSHANKSII Hook. (?).

Glabrous. *Stem* erect, fistulous or flattened. *Leaves* subremote, with 6–8-leaflets; these narrowly obovate-oblong, or elliptical, or subcuneate, apically obtuse, basally acute. *Racemes* terminal, lax, few-flowered. *Flowers* alternate or subverticillate, large (bluish when dry). *Legume* oblong, or obovate-oblong, shortly pilose, 3–4-seeded. *Seeds* white, shining.

(Chili); Magellan. "The Magellan forms have long leaves with 8–12 leaflets, which are oblanceolate, 70 by 18 mm.; racemes dense, 40 cm. long." (Speg.)

3. L. MICROCARPUS Sims.

Erect annual with verticillate *flowers*, having sides of the *vexillum reflexed; ovules* 2, with broad cotyledons. Villous, with long hairs. *Stipules* long-setaceous; *leaves* mostly approximate on long petioles; *leaflets* about 9, obtuse or emarginate, or sometimes acutish, smooth on upper surface. *Pedicels* 2–4 mm.; bracts subulate-setaceous, as long as the calyx, or shorter. *Calyx* large, villous; lips short. *Petals* purple to white, subequal, 13 mm. long; carina subciliate. *Legume* villous, ovate.

(N. W. Amer., Chili); Patagon., by Rio Chubut, and confluence of RR. Neuquen and Limay.

12. ULEX Linn. Furze.

Shrubs, with stiff *spine-like branches and leaves*, and large, yellow, solitary or spiked *flowers*. *Calyx* deeply 2-lipped.

Stamens 10, monadelphous. *Legume* ovoid to linear. *Seeds* strophiolate. Fig. in Eng. & Prantl, iii, 3, p. 237, F.

Species 10, chiefly European.

U. NANUS Forst.

Decumbent, with glabrous, linear *leaves* and branches. *Bracts* minute, appressed. *Calyx* rather glabrous, its teeth lanceolate, distant.

(W. Eur.); Patagon.; immigrant to Brazil and Magellan; also in N. Afr. The European Furze (*U. europæus* L.) is now in the Cape, and in Australia, and in parts of the United States; it is a beautiful pest.

13. MEDICAGO Linn. Medic.

Herbs, with small, trifoliolate *leaves*, and small, yellow or violet *flowers* in axillary *heads or racemes*. *Leaf-veins* pinnate, ending in teeth. *Stamens* diadelphous, 1 and 9. *Legumes* curved or spirally twisted, 1–few-seeded.

Species 50, natives of the Old World.

1. M. HISPIDA Gaertn.

Glabrous. *Stems* procumbent. *Leaflets* obcordate, toothed; *stipules* ciliate-toothed. *Peduncles* 3–5-flowered. *Pods* cochleate, glabrous, 3-cycled, obliquely flexuose-nervose, marginally aculeate, the aculeæ long, hamate. *Seeds* reniform, subtruncate, yellow.

(S. Eur.)

M. HISPIDA DENTICULATA Willd.

Leaflets cuneate at the base. *Flowers* in short heads. *Legumes* spirally twisted, spiny on the edges, several-seeded.

(Eurasia, and adventive in N. Amer.); Patagon., by Rio Negro; and near Rawson (Dusén); Magellan.

2. M. LUPULINA Linn.

Leaflets narrowed or rounded at base. *Flower-head* oblong. *Legumes* curved into a partial spire, black, not spiny, 1-seeded.

(Eurasia and N. Amer.); N. Patagon., by Rio Negro; Magellan. (Dusén.)

3. M. MACULATA Willd.

Stems prostrate. *Leaflets* obcordate or obovate, dentate, spotted. *Stipules* dentate. *Peduncles* 3–5-flowered. *Legumes* cochleate on both sides, compressed, whitish, with 3–5-cycles, nervulose, with anastomosing spines. *Seeds* reniform, yellow.

(Europe); N. Patagon., by waysides along Rio Negro.

4. M. OBSCURA Retz.

Decumbent, annual. *Leaflets* rhombic, obovate, denticulate; the nerves prominent. *Stipules* lanceolate, deeply toothed. Racemes many-flowered. *Legumes* reniform or orbicular, cochleate, veiny, entire, glabrous, 2-seeded. *Seeds* reniform brown.

(S. Eur.); Magellan, "doubtless introduced." (Dusén.)

5. MEDICAGO SATIVA Linn. Purple Medic, Alfalfa.

Perennial, with violet flowers. *Leaflets* oblanceolate or obovate. *Stipules* entire. *Pod* coiled, hairy, not prickly.

(Eur., introduced into N. Amer.); Patagon., by Rio Sta. Cruz, Rio Chubut, and Rio Negro.

14. MELILOTUS Juss.

Herbs, with trifoliolate *leaves*, and small, white or yellow flowers in slender *racemes*. *Leaf-veins* pinnate, commonly ending in teeth. *Stamens* diadelphous, 1 and 9. *Legume* ovoid or globose, straight. *Seeds* 1 or few.

Species 20, of Old World; some naturalized in America.

M. INDICA All. (*M. parviflora* Desf.)

Stem ascending. Lower *leaflets* round-obovate, entire; upper oblong, obscurely toothed. *Stipules* linear-setaceous. *Flowers* yellow, small, densely spiked. *Legumes* ovate, wrinkled, greenish-yellow, 1-seeded. *Seed* ovate, rugose, brown.

(S. Eur.); N. Patagon., common by the RR. Negro and Limay.

15. TRIFOLIUM Linn. Clover, Trefoil.

Herbs, with trifoliolate *leaves* and *stipules* adnate to the petioles; and purple, pink or yellow *flowers* in heads or dense spikes. *Calyx-teeth* subequal. *Claws* of petals slightly united to the tube of the diadelphous (1 and 9) *stamens*. *Legume* oblong, 1–6-seeded.

Species 250, chiefly natives of N. Temp. zone; some in S. Afr. and S. Amer.

1. T. ARGENTINENSE Speg.

Glabrous perennial. *Stems* diffuse, rooting at the nodes, roots often thickish. *Leaflets* obovate, retuse, denticulate; *stipules* lanceolate, mucronate. *Flowers* all axillary, dimorphous; some hypogæan, cleistogamic; others on long scapes, capitate-pedicelled, at length deflexed. *Calyx-lobes* narrow, long, acute, the upper pair much connate. *Corolla* long-exsert, ochroleucous or pink, fragrant. *Legume* 2-seeded; the *seeds* subovoid, and subflavescent.

(Argentina, near La Plata); N. Patagon, by Rio Negro, rare.

2. TRIFOLIUM POLYMORPHUM Poir.

Villous, creeping. *Leaflets* obcordate, cuneiform, denticulate, nervose. *Stipules* broad with deflexed mucro. *Heads* subrotund, long-peduncled, axillary, at length deflexed. *Calyx-lobes* short, subtetragonal. *Standard* long.

(Argentina); Magellan.

3. T. REPENS Linn. White Clover.

Creeping perennial, nearly glabrous. *Heads* on long peduncles, globose, white or pinkish, 16 mm. in diameter. *Leaves* long-petioled; *leaflets* usually obovate, denticulate.

Temp. Eurasia, Nat. in Amer.; N. Patagon, by Rio Negro.

16. GALEGA Linn.

Glabrous, perennial herbs, with odd-pinnate *leaves*, entire, venous *leaflets*, semisagittate *stipules*, and white or blue *flowers* in both axillary and terminal bracted *racemes*. *Calyx-teeth* subequal. *Standard* obovate-oblong. *Keel* obtuse. Stamens 10, united in a closed tube. *Ovules* several. *Legume* linear-terete, acuminate, striate. *Seeds* transversely oblong.

Species 3. W. Asia and S. Eur.

G. OFFICINALIS Linn.

Leaflets lanceolate, mucronate. *Racemes* exceeding the leaves. (Fig. in Eng. and Prantl, iii, 3, p. 268, H.)

N. Patagon., banks of Rio Negro (introduced).

17. ASTRAGALUS Linn.

Herbs, sometimes woody, with odd-pinnate (rarely simple) *leaves*, and blue, violet, or yellow *flowers*, mostly in spikes or racemes. *Calyx-teeth* subequal. *Standard* erect, ovate or oblong. Wings oblong. *Keel* obtuse, equalling the wings. *Stamens* diadelphous (1 and 9), anthers all similar. *Legume* often ovoid, 1–2-celled, the sutures mostly intruding. *Seeds* several.

Species 1,000, most in N. Asia; many in W. and S. United States. (not in S. Africa or Australia).

(Includes sec. *Phaca*, often regarded as a distinct genus, having mostly yellow flowers, in lax racemes or solitary, and 1-celled legumes.)

KEY TO THE SPECIES.

A. Racemes capituliform.
  b. Leaflets acute, elliptical-lanceolate, plane. Low, silky, white. *chubutensis.*
  b2. Leaflets obtuse, sometimes notched.
    c. Leaflets plicate.
      d. Leaflets 6-jugous, elliptical-ovate. Flowers yellow. *ameghinoi.*
      d2. Leaflets 7–10-jugous, obcordate. Flowers violet and yellow. *domeykoanus.*
      d3. Leaflets small. Flowers ochroleucous. Pod narrow. *sanctæ-crucis.*
    c2. Leaflets mostly plicate, oblong, 7–8-jugous. Pod inflated. *palenæ.*
    c3. Leaflets oblong-cuneate, 7–9-jugous. Flowers violet and yellow. Pod compressed. *cruckshanksii.*
A2. Racemes short, few-flowered.
  b. Leaflets linear, plicate, falcate, 5–6-jugous. Flowers blue with yellow. Pod flat, silky. *patagonicus.*
  b2. Leaflets plane, cuneate, cloven, 5-jugous. Pod linear, refract. *tehuelches.*
  b3. Leaflets oblong, retuse, 6–10-jugous, hoary. Flowers purple, small. *arnottianus.*
  b4. Leaflets oblong-elliptical, 6-jugous, plicate. Pod oval-inflated. *brevicaulis.*
  b5. Leaflets oblong-obovate, 5–11-jugous, glabrous. Flowers white. Pod stiped, oblong. *pehuenches.*
A3. Racemes 6–10-flowered. Leaflets 7–10 jugous, linear-oblong, silky beneath. Flowers white, violet tips. (= *distinens*) *bergii.*
A4. Racemes 10–15-flowered. Leaflets 10-jugous, linear. Ashy. Stipules free. *rengifoi.*
A5. Raceme spiciform, many-flowered. Leaflets 9–13, narrow-linear, obtuse. Flowers yellow-white. *distinens.*
A6. Raceme apical on long peduncle. Leaflets 10–14-jugous, elliptical, obtuse. Flowers ruddy-yellow. *procumbens.*
A7. Ovary hoary. Young leaves lax-villous. *moyanoi.*

1. ASTRAGALUS AMEGHINOI Speg.

Euastragalus. *Low*, synochreate perennial, all *appressed-pubescent*, *hoary* or villous-silvery. *Branches* slender, procumbent. *Leaves* small, unequally pinnate, almost from the middle. *Leaflets* about 6 pairs, elliptic-obovate, complicate, obtuse. *Racemes* capituliform, the pedicel shorter than the subtending leaf. *Flowers* subsessile, small. *Calyx* almost all appressed-black-pubescent, 5-fid, the lobes narrow, acute, equalling the tube. *Corolla* glabrous, yellow (?), lightly surpassing the calyx; the vexillum and wings surpassing the keel.

Legumes almost sessile, subglobose, mediocre, rigid-coriaceous, densely hoary-villous, scarcely umbonate-apiculate, many seeded. Height 5–25 cm.; root subligneous, as long as the stem.

Patagon., in dry rocky places between San Julian and Rio Deseado, and by Golfo de San Jorge.

2. ASTRAGALUS ARNOTTIANUS (Gill. sub *Phaca*).

Appressed-pubescent, hoary. *Stems* cespitose, prostrate, short, leafy. *Leaflets* 6–10 pairs, oblong, retuse. *Stipules* membranaceous, pilose, united to middle. *Racemes* peduncled, short, scarcely as long as the leaf. *Flowers* purple, small; bracts minute. *Calyx* white, pilose. Legume ovate, inflated, subreticulate.

(Chili); N. Patagon., at confluence of RR. Limay and Neuquen.

3. A. BERGII Hieron.

Undershrub. *Stems* numerous, slender, appressed-hairy. *Leaflets* 7–10 pairs, linear-oblong, silky beneath, obtuse, 1 cm. by 2 mm. *Stipules* 5 mm., connate to middle. *Peduncles* twice as long as the leaves; *racemes* 6–10-flowered. *Calyx-teeth* subulate, with black and white hairs mixed. *Petals* white-violet, spotted at apex. (*A. distinens*, fide Speg.)

N. Patagon., by Rio Negro, by rocks near Rio Chubut.

4. A. BREVICAULIS Dusén. (*Phaca.*)

Low, hairy perennial. *Stems* numerous, slender, 15 cm. high. *Stipules* amplexicaul, entire, obtuse. *Leaflets* from middle of rachis, 6 pairs, 7 mm. long, petiolulate, linear to oblong-elliptic, conduplicate, emarginate, white-hairy beneath. *Peduncles* erect, about 5-flowered. *Pedicels* hooked, black-hairy, long bracteolate. *Calyx-teeth* long-triangular, black-hairy. *Legume* oval-inflated, with persistent style. (= *A. cruikschanksii* Griseb., 1877, non *Phaca cruckshanksii* Hook & Arn., 1833.)

E. Fuegia (Dusén).

5. A. CHUBUTENSIS Speg.

Low, cespitose, synochreate perennial, all *silky villous-white.* Branches very short, crowded. Leaves mediocre, erect, imparipinnate; stipules large, villous, bifid, with acute lobes. Rachis leafy about from the middle; leaflets elliptical or lanceolate, plane, subcoriaceous. *Racemes* capituliform, the subtending leaf 2–3 times as long as the pedicels. *Flowers* few, sessile; *calyx* fuscous downwards, hoary-villous, 5-cleft upwards; the lobes linear-subulate, longer than the tube. *Corolla* bluish, a third exceeding the calyx; standard and wings clearly exceeding the keel. *Ovary* appressed, pubescent-hoary.

Patagonia, in dry places by Rio Chubut, near Lago Musters and Carren-leofú. Root 15–25 cm. long. Its acute, elliptical or lanceolate leaves distinguish it from *A. meyenianus* Speg. and *A. philippii* Speg.

6. ASTRAGALUS CRUCKSHANKSII (Hook. & Arn. sub *Phaca*).

Somewhat *robust*, decumbent, hoary or glabrous. *Leaflets*, 7–9 pairs, oblong-cuneate, obtuse or emarginate; *stipules* ovate, acuminate, the lower concrete. *Racemes* capitate, lax, longer than the leaf. *Flowers* rather large, yellow-violaceous, spreading. Bracts small. *Calyx* and *pedicels* black, appressed-pilose. Vexillum large; *legume* oblong, corneo-coriaceous, thick, compressed, transversely striate-reticulate, subpilose, with marginal sutures.

(Chilian cordilleras); Patagon., Golfo de San Jorge, Rio Sta. Cruz, Killik Aike (by Barnum Brown).

The *pubescence* of the calyx may be either white or black. Specimens from South Patagonia have the leaflets smaller and broader than the type (3.9 by 2.3 mm.), and more obtuse or nearly 2-lobed; calyx with white silky pubescence. *Legume* subacute both ways, glabrous, with the upper suture introflexed. (Speg.) Large handsome flowers and hard fruit.

7. A. DISTINENS Macl. (*Phaca distans* A. Gray, 1854, non *A. distans* Fischer, 1853.)

Slender, finely pubescent annual. Stipules ovate-subulate, partly united. Leaflets 9–13, narrow-linear, obtuse, involute when young. *Racemes* axillary, spike-like, many-flowered. *Pedicels* short, recurved. *Calyx* white-brown, hairy. *Corolla* yellow-white. *Legume* ovoid, sessile, 1 cm. long; the sutures slightly intruding.

N. Patagon., by Rio Negro.

8. A. DOMEYKOANUS (Ph.) Reiche. (*Tragacantha procumbens glabrescens* O. Ktze.)

Low, branching, suffrutescent, stems green. *Leaves* glabrescent, longer than the internodes, 3 cm., of which the petiole is one third. *Leaflets* 7–10 pairs, obcordate, plicate, notched at apex, sometimes with divergent lobes, small. *Stipules* large, connate, oppositifoliose. *Flowers* 3–8 in a head. Bracts narrow. *Calyx* covered with black hairs, its teeth narrow, as long as its tube. *Corolla* 2–3 times as long, standard violaceous, wings yellow, twice as long as the keel. *Legume* ovate, apically attenuate, covered with black hairs.

(Chili); Chubut, in the mountains by Carren-leofú.

9. ASTRAGALUS MOYANOI Speg.

A. MOYANOI VILLOSULUS Speg.

Upper part of *stems* obsoletely pilose, and younger *leaves* lax-villous. *Ovary* ventrally hoary-pubescent.

Chubut, in dry hills near Carren-leofú.

10. A. PALENÆ (Phil.) Reiche.

Perennial, coriaceous, except the young parts. Mature *leaves* with appressed hairs. *Stem* slender, flexuose. *Leaves* 7 cm. long, the petiole one fourth of this; 7–8-pairs of oblong, obtuse, mostly plicate leaflets, 1 cm. long. *Stipules* connate as an oppositifoliose sheath. *Inflorescence* exceeding the leaf, capitate. *Rachis* and *calyx* with black hairs; calyx-teeth subulate, as long as the tube. Wings shorter than keel. *Flower-heads* at length arched downwards. *Legume* ovoid, inflated, with 12 seeds.

Chubut, in dry hills by Carren-leofú. Standard and apex of keel sky-blue.

A. PALENÆ GRANDIFLORUS Speg.

Taller than the species. *Leaflets* 10–12 pairs, obovate, complicate, apically emarginate-subtruncate. Flowers larger, 15–18 mm. long, *Ovary* always glabrous.

N. Patagon., dry meadows near Lago Nahuel-huapi.

11. A. PATAGONICUS (Phil. sub *Phaca*) Speg.

Perennial, multicipital, with white, silky *leaves*. Branches short; *stipules* scarious, connate, funnelform, sheathing. *Leaflets* 5–6 pairs, linear, plicate, falcate. *Peduncles* axillary, as long as the leaves; *raceme* short, 6-flowered. *Calyx* black, hirsute, its teeth subulate, rather short. *Corolla* blue, with some yellow, more than twice as long as the calyx. *Legume* silky, ashy and black, compressed-elliptical.

Patagon., on pampas by Coy Inlet (Peterson); Rio Sta. Cruz and Gallegos. Magellan, by valley of Lago Blanco, and Rio Chubut.

12. ASTRAGALUS PEHUENCHES Ndrln.

Phaca. Herb, from *thick root*, 15 cm. high, glabrous, leafy. *Leaflets* 5–11 pairs, rusty, petiolulate, oblong-obovate, obtuse, glandular, the young hairy. *Stipules* slender, free, acuminate, ciliate. *Peduncles* axillary, 3 cm. long, 4–5-flowered. *Bracts* small; bractlets smaller. *Calyx-teeth* acuminate, upper pair more remote. *Petals* white, twice as long; standard obovate. *Stamens* diadelphous, 1 free and 9 united halfway. *Stigma* capitate, style smooth. *Legume* oblong, glabrous, stipitate. *Seeds* 5.

N. Patagon., by Rio Negro.

13. A. PROCUMBENS Hook. & Arn.

Stem slender, procumbent, 30 cm. long, white-woolly especially upwards. *Stipules* large, oval, amplexicaul, scarious-yellow. *Petioles* long, weak, setaceous, villous. *Leaflets* 10–14 pairs, elliptical, obtuse, entire, villous below. *Peduncles* long, woolly, floriferous at apex. *Bracts* long, lanceolate, scarious. *Pedicels* black. *Calyx* hairy; its teeth long. *Corolla* ruddy-yellow. *Legume* triquetrous, pubescent. *Seeds* several.

N. Patagon., by Lago Nahuel-huapi.

14. A. RENGIFOI Phil.

Ashy, with sessile and appressed hairs. *Stems* various from the same root. *Leaves* 8 cm. long, the petiole being one fourth of this. *Leaflets* 10 pairs, linear, sometimes emarginate. *Stipules* free, long-triangular, with white hairs and a green midrib, a *row of black* hairs below them. *Inflorescence* exceeding the leaves, flowers 10–15, short-pediceled. Bracts very short. *Calyx* short tubular, with very short teeth, having black and white hairs. *Standard* twice as long as the calyx, bluish. Wings exceeding the keel. *Legume* nearly 2 cm. long, cylindrical, coriaceous, slightly curved, appressed-pubescent.

(Atacama.)

A. RENGIFOI LEIOCARPUS Speg.

(A young specimen.) Differing from the type by *absence* of the substipular *ring of hairs*, and by the *ovaries* being glabrous, and the (immature) *ovary* being narrower and longer.

N. Patagon., at confluence of RR. Limay and Neuquen.

15. ASTRAGALUS SANCTÆ-CRUCIS Speg.

Suffruticose perennial, multicipital, stipules connate. All parts with minutely appressed, cinereous pubescence; branches short. *Stipules* minutely triangular, connate. *Leaflets* nearly to base of leaf, 6–8 pairs, glabrous above, plicate, obtuse, small. The axillary *peduncles* not exceeding the leaves, *capitately floriferous*. *Flowers* small. *Calyx-teeth* as long as the tube. *Corolla* ochroleucous. Pod narrow.

S. Patagon., at Monte Leon by R. Sta. Cruz.

16. A. TEHUELCHES Speg.

Phaca, low, synochreate, glabrate to hoary; *branches* subprocumbent, terete. *Stipules* small, acutely bidentate. *Leaves* mediocre, one third part of the petiole naked, imparipinnate, with about 6 pairs of plane cuneate, bilobed *leaflets*, their lobes acute. *Racemes* axillary, not half as long as the subtending leaf, few-flowered. *Calyx* scarcely white-puberulous, 5-cleft, teeth subulate-acute, shorter than the tube. Corolla? *Legumes* refract, sublinear, triquetrous-scaphoid, acute both ways, with obtuse margins, pale-glabrous, scarcely nervulose.

Chubut, in sandy places along Rio Chico. Allied to *A. sanctæ-crucis*, but distinguished by the softer, larger, refract pods, and the flat leaflets resembling a goat's cloven-foot. (Speg.)

18. TRAGACANTHA Tourn. (Section of *Astragalus* in Eng. & Prantl.)

Low shrubs, like *Astragalus*, of which it is commonly regarded as a section. *Stigma* not hairy. *Hairs* of other parts simple. *Calyx* turbinate, with pointed base, sessile. *Pod* shorter than the calyx, 1-celled, mostly 1 seeded. *Leaves* odd-pinnate, or even-pinnate and the rachis then ending in a thorn. *Stipules* connate.

Species 150, chiefly in Mediterr. region to S. W. Asia. (Fig. in Eng. & Prantl, iii, 3, p. 295.)

T. PROCUMBENS GLABRESCENS O. Ktze.

Glabrescent. Patagon.

19. GLYCYRRHIZA Linn. Licorice.

Herbs, with thick, sweet *roots*, odd-pinnate *leaves*, and spicate or capitate *flowers*. *Standard* narrow, short-clawed; *keel* shorter than the wings. *Stamens* diadelphous, 1 and 9, *anthers* alternately large and small. *Legume* sessile, prickly or glandular, continuous between the few *seeds*. (Fig. in Eng. & Prantl, iii, 3, p. 300, E, F.)

Species 15, N. Temperate; S. Amer. and Australia.

G. ASTRAGALINA Gill. & Hook.

Glabrous, but glandular. *Root* and stock creeping. *Leaflets*, 4–5 pairs, linear-oblong, retuse, mucronate. *Spikes* lax, axillary, on peduncles exceeding the leaves. *Flowers* blue. *Legume* moniliform, glabrous.

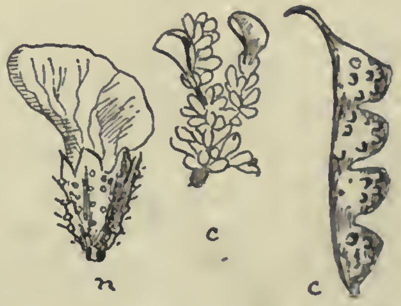
(Chili, whence it descends along the river valleys); Patagonia, from Bahia Blanca to Magellan. N. Patagon., at confluence of RR. Limay and Neuquen; at Carmen de Patagones; along Rio Chubut. Leaves obovate, spikes equalling the leaves. (Speg.)

The root tastes as licorice. "A decoction of the resinous leaves is administered to women after child-birth." "Curuzu; Milpi."

20. PATAGONIUM Schrank (*Adesmia* DC.).

Herbs or undershrubs, mostly unarmed, with odd- or even-pinnate, sometimes 2–3-foliolate, exstipellate *leaves*, and yellow, or red-striate *flowers*, solitary or in terminal or axillary racemes. *Bracts* small; no bractlets. (Fig. 75.)

FIG. 75.



Patagonium.—*c*, *c*, *P. carnosum*, flowering shoot and legume; *n*, *P. negeri*, flower. (After Dusén.)

Calyx-lobes subequal, or the lowest slightly longer; *standard* orbiculate, *keel* slightly shorter. *Stamens* free, but the two upper filaments often broad-based, and united to the standard. *Ovary* sessile; stigma small, terminal. *Legume* with straight upper suture, and sinuate lower. *Seeds* 2–several.

Species 90, in S. America, chiefly Andean; numerous in Patagonia though characteristic of a warm and dry climate.

(As the generic name has been only recently resurrected, most of the specific descriptions have originally appeared under *Adesmia.*) Relatively to the fruit the genus has 3 sections, viz:

(1) *Leiocarpum:* Legumes glabrous, smooth or verrucose.

(2) *Dasycarpum:* legumes puberous, hispid or villous, with simple hairs.

(3) *Ptilocarpum:* legumes with villous or plumose setæ.

Key to the Species.

A. Unarmed, herbs or shrubs.
b. Flowers solitary in the axis.
c. Dwarf, subcespitose, silky villous. Leaflets 5–8 pairs. Flowers large, on long pedicels. (= *villosum?*) *morenonis.*
c2. Woody decumbent. Leaflets 3 pairs. Standard violet-lined. *parvifolium.*
c3. Woody diffuse. Leaflets 7–5 pairs, glabrous, small, retuse. Legume tomentose. *retusum.*
c4. Diffuse, woolly undershrub. Leaflets 3–5 pairs. Legume 3-jointed. *lanatum.*
c5. Prostrate, silky herb. Leaflets 5–7 pairs. Flowers large. Legumes 2–3-jointed. *villosum.*
c6. Appressed silky, with woody stem. Leaflets 2, sessile. *lotoides.*
c7. Viscid, creeping herb. Leaflets 3 5 pairs, ciliate-toothed. Legume 10-jointed hairy. *pumilum.*
c8. Low, snowy-silky. Leaflets 3. *suffocatum.*
c9. Leaves and pedicels long; leaflets 3–4 pairs. Flowers orange. Legume 4–5-jointed. *leptopodum.*
b2. Flowers solitary, terminal. Leaves fleshy, glabrous, trifoliolate.
c. Cespitose perennial, with crowded leaves. Flowers golden. Legume glabrous. *salicornioides.*
c2. Low with woody, leafless base. Flowers orange. Legume tubercled, hairy. *carnosum.*
b3. Flowers in axillary racemes, small.
c. Leaflets 6–7 pairs, emarginate, truncate. *affine.*
c2. Trifoliolate, smaller upwards. *trifoliatum.*
b4. Terminal raceme and axillary flowers. Leaflets 5–7 pairs, glandular. Legume 4–8-jointed, muricate. *muricatum.*
b5. Flowers in axillary and terminal racemes. Leaflets 10–15 pairs and terminal cirrhus. Legume 3-jointed, hairy-glandular. *boronioides.*
b6. Flowers in terminal racemes.
c. Leaflets 3 pairs, thick. Flowers 1–6 in raceme, orange. *ameghinoi.*
c2. Leaflets 3–5 pairs. Undershrub.
d. Standard silky. Hoary. *griseum.*
d2. Standard glabrous. White-tomentose. *candidum.*
c3. Leaflets 4 pairs, smooth. Flowers purple. *sylvestrii.*
c4. Leaflets 11–13, silky, small. Legume bristly. Annual. *filipes.*
c5. Leaflets 5–7 pairs, pubescent.

            - *d.* Legume 7 8-jointed, rough pendent. *pendulum.*
            - *d2.* Legume 3-jointed, with feathery bristles. *longipes.*
        - *c6.* Leaflets 13. Legume 3–4-jointed, glandular. *confertum.*
        - *c7.* Leaflets 7–8 pairs, obcordate, viscid-punctate. Legume 9–13-jointed. *retrofractum.*
        - *c8.* Leaf-rachis produced phyllodially. Racemes few-flowered, pedicels bracteolate. *graminidium.*
    - *b7.* The racemes terminal on the branches. Leaflets 3 pairs. Flowers orange. Legumes many-jointed. *tehuelchum.*
    - *b8.* Flowers paniculate. Leaflets 5–8 pairs and a terminal spine. Standard erect, maroon-colored. Legume silky, muricate. *mucronatum.*
    - *b9.* Racemes long, lax.
        - *c.* Leaflets 10–12 pairs, oblong, glabrous. Fruit 10-jointed, hispid. *latifolium.*
        - *c2.* Leaflets 4–11 pairs, linear-oblong, hoary. Fruit 2-jointed, hispid. *incanum.*
    - *b10.* Flowers minute, hidden. Leaves small, crowded; leaflets 4 pairs, subobovate. *aphananthum.*
- *A2.* Spinescent shrubs.
    - *b.* Flowers solitary in the axils or fasciculate.
        - *c.* Low, cespitose, with black, subterraneous stem and ground-leaves. Hoary. Legume 4-jointed. *subterraneum.*
        - *c2.* Branching, hoary shrubs. Leaflets 5–6 pairs, thickish. Flowers orange, with red lines. Legume 4-jointed. *negeri.*
        - *c3.* Flowers on spinescent branches. Leaflets 2–3 pairs, thickish. Legume 1-jointed. *patagonicum.*
    - *b2.* Flowers in racemes.
        - *c.* Leaflets 4 pairs.
            - *d.* Erect, hairy; leaves fasciculate. *gracile.*
            - *d2.* Cespitose, hoary; old branches spiny. *karraikense.*
        - *c2.* Pubescent. Leaflets 3–5 pairs, small. Legume 3–5-jointed, bristly. *trijugum.*
        - *c3.* Leaflets 5–7 pairs, hoary. Black spot on pubescent standard. *pungens.*
    - *b3.* Flowers paniculate. Leaflets 4–6 pairs, hoary. Legume twisted, 3–4-jointed. *canescens.*

1. Patagonium affine (Hook. f.).

Unarmed; racemed; glandular-pubescent. *Stem* herbaceous, branching. *Leaves* odd-pinnate, with small stipules. *Leaflets* 6–7 pairs, petiolulate, linear-oblong, emarginate-truncate, obscurely ciliate-dentate. *Peduncles* axillary, long, naked. *Flowers* small, *calyx* equal at the base, its segments acute. *Standard* half exceeding the calyx.

Patagonia, from Bahia Blanca to Magellan.

2. P. ameghinoi (Speg.).

Unarmed. Perennial, low, cespitose. Leaves apically crowded, densely pubescent. *Leaflets* 3 pairs, obovate, thick, entire. *Flowers* apical, solitary or 3–6-racemed; the peduncle exceeding the leaves, pubescent. *Calyx* hairy, green, with red; its teeth linear, obtuse, long. *Corolla* orange, little-exserted; vexillum dorsally pubescent.

S. Patagon., by Rio Sta. Cruz, and Gulf of San Jorge; dry hills near Nafofo-cahuellu.

3. PATAGONIUM APHANANTHUM Speg.

Dasycarpum. Low, *unarmed* perennial, all *hoary-hispidulous. Stems* many, laxly hemispherical, subcespitose. *Leaves* small, crowded towards the ends of the branches, the base of the petiole connate with the *stipules.* and folioliferous above the middle. *Leaflets* imparipinnate, 4 pairs and an odd one, obovate or oblanceolate, spreading, pilose-hispidulous.

Flowers very small and difficult to see, solitary in the axils and cernuous on moderate pedicels. *Calyx* 5-cleft beyond the middle,lobes acute, hoary-rough. Corolla lutescent, vexillum excepted, glabrous. *Legumes* very small, 2–3-jointed, basal joint glabrous, others rough.

Height 3–5 cm.

Chubut, at Teka-choique.

4. P. BORONIOIDES (Hook. f.).

Leiocarpum. Unarmed; racemed; suffruticose, glabrous, but with viscid, wart-like glands. *Stem* 45 cm. high; branches ascending, terete, articulate. *Leaves* long on thick petioles, ending in a cirrhus, and with inconspicuous *stipules. Leaflets* 10–15 pairs, small, sessile, broad-ovate, toothed, coriaceous. *Racemes* lateral and terminal, obtuse, the bracteoles short. *Calyx* broad-ovate, shortly 5-cleft, one third as long as the glabrous standard. *Flowers* 8 mm. long, yellow, streaked brown. *Legume* 3-jointed, glandulous.

Patagon., Rio Chubut; Puerto Deseado; Cape Fairweather; Upper Valley of Rio Gallegos (Nordenskj.); W. Patagon., by Lago Toro (Dusén); E. Fuegia (Ansorge). Not in S. Fuegia.

5. P. CANDIDUM (Hook. f.).

Unarmed; racemed, frutescent; white, with fine, appressed tomentum. Paniculately branched upwards, the branches terete. *Leaves* sparse, pinnate, on thickish, canaliculate petioles; with small, deciduous *stipules. Leaflets* 3–5 pairs, oval-oblong, rounded at both ends, coriaceous, entire, nerveless. *Racemes* lax, terminal, pendulous on short pedicels, bracteolate at their base. *Calyx* silky, its segments subacute. *Standard* twice as long, glabrous.

Leaves 18 mm., long; leaflets 4–8 mm., margins recurved.

Patagon., on the E. Coast.

6. PATAGONIUM CANESCENS (A. Gray, sub *Streptodesmia*).

Armed by spiny branches and panicles; hoary, intricately branching undershrub. *Leaves* even-pinnate. *Leaflets* 4–6, oblong or ovate. *Pedicels* short, curved. *Corolla* yellow, not twice as long as the calyx. *Legume* 3–6-jointed, becoming spirally twisted; its joints 2-valved, 1-seeded, falling separately.

N. Patagon., Rio Negro to Chubut.

7. P. CARNOSUM (Dusén).

Unarmed; not racemed, low, glabrous except the flowers. *Stem* 15 cm. high, thick, woody, branching, leafless below; sheathed by dark, rugose stipules; the *stipules* connate, fleshy, with short lobes. *Leaves* crowded, short-petioled, trifoliolate, fleshy, clavate, with short, fugacious tip. *Flowers* terminal, solitary, orange. *Calyx* campanulate, equally 5-cleft to the middle. *Corolla* 2–3-times as long, its standard suborbicular, white-pilose, enclosing the wings and keel. *Legume* 2–4-jointed, tubercular, white-pilose, bearing long, recurved remains of the style.

(" Like *P. salicornioides* of Speg., but differing by the tubercular joints of the fruit.")

E. Fuegia (Ansorge). A steppe plant.

8. P. CONFERTUM (Hook. & Arn.) Reiche.

Unarmed; racemed; pinnate. *Leaflets* mostly 13, obovate-oblong, retuse, mucronate. *Raceme* terminal, many-flowered, with black glands. *Pedicels* 1–2 cm., deflexed in fruit. *Legumes* 3–4-jointed, rough-glandular.

Chili. Patagonia, Port San Julian; "apparently widely diffused between 33° and 50° S. Lat., on both sides of S. Amer." J. D. Hooker. Patagon.; (M. & T.)

9. P. FILIPES (A. Gray).

Unarmed; racemed; pinnate. Slender annual, pubescent, glandular, erect, branching. *Leaflets* 11–13, only 2–3 mm. long, oval, obtuse, grayish, silky. *Raceme* terminal, long, few-flowered. *Corolla* yellow, twice as long as the calyx. *Legume* villous, with plumose bristles.

Patagon.; by Rio Negro, Rio Chubut, and by Rio Chico de la Sta. Cruz. (*P. furcatum* Phil. vide *P. karraikense* Speg.)

10. PATAGONIUM GRACILE (Meyen) Reiche.

Armed, racemed. Fruticose, the branches striate, pubescent. *Leaves* subfasciculate. *Leaflets* 4 pairs, obovate-elliptic, mucronulate, puberulous. *Raceme* short, ultimately spinose. *Calyx* hairy, its teeth long. *Legume* many-jointed; plumose.

(Chili; Arg., llanos at Rio Maipo at 3,000 meters elevation.) S. Patagon., by Rio Sta. Cruz.

11. P. GRAMINIDIUM Speg.

Ptilocarpum. Unarmed. Glabrous, green-subglaucous, perennial. *Stems* erect, divaricate, flexuose, subangulate-terete, laxly leafy. *Leaves* alternate, with short, ovate or lanceolate *stipules*. *Petioles* subterete, apically without a joint, produced in 2 narrow-linear, long *phyllodia* (?), armed between the leaflets with a small mucroniform point. *Racemes* acrogenous, few-flowered; *pedicels* bracteolate at the base, spreading, 1-flowered; flowers mediocre; *calyx* 5-cleft, muricate; *corolla* glabrous, yellow-testaceous. *Loments* often only 1-jointed; joint rather large, glabrous, but laxly setose-plumose.

Chubut, in dry rocks by Golfo de San Jorge.

12. P. GRISEUM (Hook. f.).

Unarmed; racemed; pinnate. Hoary-pubescent undershrub, with slender, flexuose branches. Petioles slender; *stipules* small, subulate. *Leaflets* 3–5 pairs, linear-obovate, obtuse, apiculate, entire, appressed, silky. *Racemes* subterminal, long, few-flowered. *Pedicels* short, basi-bracteolate. *Calyx-teeth* short, subulate. *Standard* twice as long, silky on the back. *Loments* cernuose, 6–8-jointed, with plumose setæ.

N. Patagon., and towards Buenos Aires; "common, especially in sandy ground, to 40 S. Lat." (J. Ball.) In sands at mouth of Rio Negro.

13. P. INCANUM (Vogel) O. Ktze.

Unarmed. Hoary-pubescent, and viscidulous-hispidulous. *Stem* suffrutescent, prostrate, branching; branches ascending, angulate. *Leaflets*

4–11-jugous, linear-oblong, sparsely pubescent. *Racemes* elongate, many-flowered. *Flowers* largish; calyx-teeth long. *Legume* 2-jointed, hispid.

(S. Brazil); N. Patagon., by Carmen.

14. PATAGONIUM KARRAIKENSE (Speg.).

Armed; racemed; pinnate. Small, cespitose shrub; the old branches becoming naked and spiniform; the younger with crowded *leaves*, and short, terminal *racemes*. *Leaflets* from middle of petiole, 4-pairs, and an odd one, elliptic, entire, hoary. *Flowers* few, concealed in the upper leaves, orange. *Legume* 4–5-jointed, with long, white, feathery setæ.

A specimen in the Gray Herbarium is labelled *Adesmia furcata* Phil., but this name does not occur in Philippi's Catalogue, nor in the *Index Kewensis*, nor in Reiche's *Flora de Chile*.

S. Patagon., in rocks at Sierra de los Baguales.

15. P. LANATUM (Hook. f.) Reiche.

Unarmed, woolly undershrub, 15 cm. high, with diffuse, slender branches. Not racemed. *Stipules* slightly sheathing, with acute auricles upwards. *Leaflets* 3–5 pairs, linear-oblong, obtuse. Pedicels axillary, 1-flowered, shorter than the leaves. *Calyx* long, its teeth linear-subulate. *Standard* elliptic-oblong, tomentose on back. Style long. Legume 3-jointed. Seeds broad.

Patagon., Puerto Deseado; Magellan; by Rio Chubut, by Hatcher at Cordilleras of S. Patagon. Flowers purplish, leaflets glabrescent; other parts more or less woolly. Golfo de San Jorge. (Speg.)

16. P. LATIFOLIUM (Spreng. sub *Æschinomene*) O. Ktze.

Unarmed. Herb, with prostrate, rooting *stem;* petioles and racemes hispid. *Leaflets* 10–12-jugous, oblong, mucronate, glabrous. *Raceme* long, many-flowered. *Legume* about 10-jointed, hispid with rigid setæ.

(S. Brazil, Montevideo); N. Patagon., by Carmen.

17. P. LEPTOPODUM (Speg.).

Unarmed; not racemed. *Stem* slender, glabrous. *Leaves* far exceeding the internodes; *stipules* ovate, connate-amplexicaul; petiole foliferous above the middle. *Leaflets* 3–4 pairs, sessile, lanceolate to elliptic-linear, acute both ways, entire. *Flowers* solitary, peduncle axillary, slender, as long as the leaves. *Corolla* orange, glabrous, twice as long as the calyx. *Legume* 4–5-jointed.

S. Patagon., by Rio Chico de la Sta. Cruz. In meadows between S. Julian and Rio Deseado.

18. PATAGONIUM LONGIPES (Phil.) Reiche.

Unarmed; racemed. Small, branching perennial, with short pubescence. *Leaves* pinnate, 2–4 cm. long; *leaflets* 5–7 pairs on the upper two thirds; oblong-oboval, obtuse, 3–5 mm. broad. *Stipules* lanceolate, acute, 3 mm. *Racemes* short; pedicels 15–20 mm. long, slender. *Calyx-teeth* long. *Corolla* twice as long as the calyx. *Legume* 3-jointed, covered by long feathery bristles. N. Patagon.

19. P. LOTOIDES (Hook. f.) Reiche.

Unarmed and not racemed. *Appressed-silky*, with woody stem, divided at the base. *Stipules* sheathing, with short diverging auricles. *Petiole* none. *Leaflets* 2, sessile, lanceolate, acuminate, all silky. *Peduncles* axillary, 1-flowered, 2–3 times as long as the leaf. *Calyx* silky, subequal at base, its teeth ovate-subulate, *corolla* orange. Margins of standard ciliate; a bearded callus on its unguis. Keel axe-shaped. *Style* long. *Legumes* 5-jointed.

Common over all Patagon.; Magellan; E. Fuegia (Dusén). All covered by malpighiaceous hairs; otherwise of the habit of *Lotus corniculatus* L.

P. LOTOIDES VAGINATUM Hook. f.

Peduncle not as long as the longer leaves. *Standard* silky throughout. S. Patagon., by Puerto Deseado.

20. P. MORENONIS (Harms) O. Ktze.

Unarmed. Dwarf, subcespitose herb, villous, the young parts *silky*. *Leaflets* 5–8 pairs, villous-rough, oblong, with large, sheathing stipules. *Flowers* solitary, rather large, on long, rough pedicels. *Calyx-segments* rough, long-lanceolate. *Leaves* 3–4 cm. long.

At Killik-Aike, Rio Gallegos (by Barnum Brown), S. Patagon. Stock suffruticose. ("= *Adesmia villosa* Hook. f." Speg.)

21. PATAGONIUM MUCRONATUM (Hook. & Arn.) Reiche.

Unarmed; racemed. Undershrub 6 cm. high, glandular-viscid. *Leaves* pinnate, with large subulate-lanceolate stipules, the rachis ending in a spine. *Leaflets* 5–8 pairs, oblong-lanceolate, mucronate, rigidly pilose. *Racemes* panicled. *Standard* erect, hairy outside, maroon-colored. Calyx hairy, its teeth acute. *Legume* linear-oblong, silky, muricate, 3–4-seeded.

(Chili); S. Patagon, by J. B. Hatcher at Rio Chico de la Sta. Cruz, Dec. 30, 1896.

22. P. MURICATUM (Jacq.) O. Ktze.

Unarmed. Decumbent, glandular-scabrid annual. *Leaflets* 5–7-jugous, obovate, emarginate, margin scabrid. *Pedicels* axillary and a terminal raceme. *Legumes* 4–8-jointed, joints muricate.

Chubut, in elevated meadows by Golfo de San Jorge.

23. P. NEGERI (Dusén).

Armed; not racemed. White-pilose shrubs, with the old branches covered by withering stipules. Branches passing into sharp spines. *Leaves* with connate stipules on the branchlets and spines; *leaflets* 5–6 pairs, oblong, entire, thickish, hairy. *Flowers* solitary in the axils, with white, spreading hairs. *Calyx* campanulate, its teeth triangular. *Corolla* orange, its standard with reddish lines, mostly enclosing other parts. *Legume* 4-jointed, with long, yellow hairs; tipped by the recurved style. Leaves 2 cm. long; leaflets 5 mm.

S. Patagon., Valley of Rio Gallegos. (Nordenskj.)

24. P. PARVIFOLIUM (Phil.) O. Ktze.

Unarmed. Suffruticose, low, sparsely puberulous. Stem much branching, decumbent. *Leaflets* trijugous, small, oblong-linear, narrower baseward, rounded apically; petioles naked half-way. *Stipules* leafy, oblong, acute, connate. *Peduncles* axillary, solitary, as long as the naked part of the petiole. *Calyx* shorter than the peduncle, its segments linear-lanceolate, as long as its tube. *Corolla* twice as long as the calyx. *Vexillum* violet-lined. Pod (?).

(Andes, near Linares); Patagonia.

25. P. PATAGONICUM (Speg.).

Armed; not racemed. Glabrous or hairy shrub; its many branches spinescent. *Leaves* few; *leaflets* 2–3 pairs, elliptical or obovate, remote, thickish. *Flowers* sparse on the spinescent branches, on short peduncles. *Calyx*-teeth linear, shorter than the tube. *Corolla* exceeding the calyx, yellow. *Legume* small, 1-jointed, smooth.

S. Patagon., along Rio Sta. Cruz and Rio Chico. By Rio Chubut. (More tomentose forms approach *P. canescens* Gray.)

26. P. PENDULUM (DC.).

Unarmed; long-racemed. *Stems* diffuse, scarcely pubescent. *Leaves* pinnate; the *leaflets* 5–7 pairs, oval-oblong, entire, pubescent, nerveless. Lower flowers of *raceme* distant. *Flowers* yellow, reddish outside. *Legume* pendulous, 7–8-jointed, subhispid.

Argentina to N. Patagon. (?).

27. P. PUMILUM (Hook. f.) Reiche.

Unarmed; not racemed. Sparingly viscid-hairy, creeping herb, with short stem, 5–10 cm. long, and pinnate *leaves,* having broad, sheathing *stipules,* which are produced upwards as broad auricles. *Leaflets* 3–5 pairs, coriaceous, obovate-cuneate, obscurely ciliate-toothed, 6 mm. long. *Peduncles* 1-flowered, equalling the petioles; flower erect, incurved in fruit. *Calyx* campanulate, subequal at base. Standard twice as long, glabrous outside. *Style* long. *Legume* linear-compressed, about 10-jointed, crenate at the joints, pubescent. (Standard purplish; wings yellow).

S. Patagon., at Killik Aike near head of Rio Chico (Hatcher); Puerto Negro; Magellan; Fuegia.

28. P. PUNGENS (Clos.) Reiche.

Armed; shortly-racemed. Hoary shrub, with distorted branches, and short, crowded branchlets, having subulate spines. *Petioles* of the pinnate *leaves* produced apically. *Leaflets* 5–7 pairs, ovate to ovate-lanceolate, apiculate, small, entire, hoary. *Racemes* terminal on the branches. *Pedicels* short. *Calyx* campanulate; its teeth lance-linear, twice as long as the corolla. *Corolla* pubescent externally; *standard* with black spot. Legume (?).

(Chili.); Patagon. (?).

29. P. RETROFRACTUM (Hook & Arn.) Reiche.

Unarmed; large racemes. Glandular-hairy, with pinnate *leaves. Leaflets* 7–8 pairs, obcordate, obscurely toothed. *Standard* broad, striate, overlapping the other parts. *Legumes* linear, 9–12-jointed, bristly glandular. A bush with viscid leaves. (Perhaps = *P. muricatum.*)

By Rio Gallegos (Barnum Brown). Patagon., along the coast south of Rio Sta. Cruz.

30. PATAGONIUM RETUSUM (Griseb.) Reiche.

Unarmed; not racemed. Diffuse undershrubs, 10 cm. high, green, sparsely pilose, with ascending, leafy branches. *Leaves* pinnate, with ovate, acutish stipules, as long as the short petiole. *Leaflets* 7–5(–3) pairs, very small, cuneate-obovate, retuse, plicate with midnerve, glabrous. *Peduncle* 1-flowered from the upper axils. *Calyx* campanulate, its teeth unequal, pubescent. *Standard* twice as long, puberulous outside towards base. *Ovary* tomentose; ovules several.

(Chili.) S. Patagon. (Hatcher. The peduncles are longer than the flower, and bear 1–4 flowers; the calyx and tomentose legumes are covered with black hairs; the legumes at length urceolate.)

31. P. SALICORNIOIDES Speg.

Unarmed. Cespitose, perennial, very fleshy and glabrous, with crowded *leaves. Stipules* subconnately sheathing, with ovate lobes; petiole short; *leaflets* 3, subterete, obovate. Apical branchlets, with solitary, sessile *flowers. Calyx-teeth* linear, obtuse, as long as the tube; *corolla* golden, twice as long as the calyx. *Pod* 1–3-jointed, naked, glabrous. Habit nearly of *Salicornia.*

S. Patagon., in rocky fissures near Lago Argentino; in rocks at Sierra de los Baguales.

32. P. SUBTERRANEUM (Clos.) O. Ktze.

Armed shrub, dwarf, with thick, tubercled, blackish, subterranean stems. Branches subterranean and subcorymbose. *Leaves* cespitose, crowded, scarcely emerging from the ground, appressed, hoary-pubescent; *leaflets* 2–3 pairs and a terminal, small, obovate-oblong, mucronate. *Flowers* few, very short, peduncled, immersed in the leaves. *Calyx* 3-cleft, the 2 lateral broad segments each 2-toothed. *Corolla* twice as long as the calyx. *Pod* exceeding the calyx, 4-jointed, silky.

(Chili); Patagon.

33. P. SUFFOCATUM (Hook. fil.).

Unarmed, low, cespitose shrub, silvery-silky. *Leaves* 2–3-foliolate, the *leaflets* obovate, conduplicate, enclosing the solitary, subsessile flowers.

Standard broad-orbicular, dorsally silky, its margins inflexed. Wings lobed, bearded inside. Fruit?

S. Patagon. at Puerto Deseado (by Charles Darwin); Chonkenk-aike, "abounding in sandy places, yet the legumes are unknown." (Speg.)

34. PATAGONIUM SYLVESTRII Speg.

Unarmed. Ptilocarpum. Low, woody, perennial. *Branches* lax, about 12 cm. long, fuscous-brown, glabrous, laxly leafy. *Leaves* imparipinnate, the petioles folioliferous from the lowest third. *Leaflets* usually obovate, thickish, entire, nerveless, glabrous or upper surface appressed and obsoletely puberulous. *Stipules* fuscous, their lobes short, acute, pallid on margin. *Racemes* often very long, flexuose, lax-flowered, black-purple, with a shorter pedicel. *Loments* 1-jointed, black-purple, with white plumose setulæ.

S. Patagon by Rio Sta. Cruz, near Lago Argentino.

35. P. TEHUELCHUM (Speg.).

Unarmed; laxly racemed. Perennial, quasi-glabrous, really hispid. Branches subsimple, remotely leaf-bearing. *Leaflets* on upper half of petioles, 3 pairs, thick, spatulate. *Racemes* terminal on the branches. *Calyx-teeth* long. *Corolla* orange, twice as long. *Legume* many-jointed.

Chubut, in dry places near Lago Musters; S. Patagon., along Rio Scheuen, branch of Rio Chico.

36. P. TRIFOLIATUM (Gill.) O. Ktze.

Ptilocarpum. Unarmed; hoary-pilose, perennial, with many short branches from the crown of the root, 5–10 cm. high, often decumbent. *Leaves* 3-foliolate, alternate, becoming smaller and more crowded upwards. *Stipules* lanceolate. *Leaflets* elliptical-obovate, rounded, entire, green-hoary on epiphyll, white tomentose on hypophyll. *Racemes* axillary, shorter than the leaf, the lower half of the rachis bare, upper part crowded. *Flowers* refract, small; calyx hoary-villous, 5-toothed more than half-way down. *Corolla* slightly larger than calyx, the vexillum orange, dorsally purplish and villous, equalling the orange wings and keel. *Legume* refract-linear, 3–4-jointed, with few, plumose setulæ.

N. Patagon., near Fort Roca.

(*P. trifoliatum* (Ph.) Reiche, must be called *P. triphyllum* (Ph.) Speg., a Chilian form.)

37. PATAGONIUM TRIJUGUM (Gill.) Reiche.

Armed; racemed. Shrub, pubescent, or tomentose, or glabrous. Branches short, stout, intricate, their apex naked, repeatedly forking and spinescent; spines simple or strong and forking. *Leaves* fasciculate from tubercles, pinnate. *Leaflets* 3–5 pairs, small, ovate-cuneate, retuse or mucronate, entire or toothed, sessile. *Pedicels* racemosely crowded at the ends of the branches, rather long. *Calyx* long, its teeth narrow-lanceolate. *Legume* 3–5-jointed, covered with long, feathery bristles.

Patagon., mountains of Chubut; Puerto Deseado, Rio Sta. Cruz.

38. P. VILLOSUM (Hook. f.) Reiche.

Unarmed; not racemed. Soft-silky herb, 5–7 cm. high, with prostrate, ascending stem and pinnate *leaves. Stipules* rather large, produced upward into auricles. *Leaflets* 5–7 pairs, obovate-cuneate. *Pedicels* shorter than the petioles, axillary, 1-flowered. *Flowers* large. *Calyx-teeth* long, linear-subulate. *Standard* slightly exceeding the calyx. *Style* long. *Legume* 2–3 jointed, hairy.

S. Patagon., Puerto Deseado; Rio Chico. By Rio Chubut and Lago Musters.

P. villosum typicum Speg. All rufescent-villous. Leaflets obtuse or emarginate.

P. villosum acutifolium Speg. All ashy-villous. Leaflets oblanceolate, acute, entire.

P. villosum glabratum Speg. Branches, petioles and leaflets glabrous; pedicels and calyx ashy-villous. Killik Aike (by Barnum Brown).

21. VICIA Linn. Vetch.

Climbing or trailing herbs, with tendril-bearing, pinnate *leaves* (the terminal tendril sometimes represented by a small setula), semisagittate or entire stipules, and axillary, sessile or racemed, blue, violet, or yellow *flowers.* Calyx-tube slightly oblique, the teeth equal, or the posterior pair longer. *Standard* obovate or oblong, emarginate, clawed. *Wings* adhering to the shorter keel. *Stamens* diadelphous, 1 and 9, or all united below. *Style* tufted near the tip. *Ovules* several. *Legume* flat, dehiscent.

Species 120, widespread in Temperate regions. "Their Southern limit is in the Strait of Magellan; and they are more on the West than on the East coast." (J. D. Hooker.) Not native in Argentina, nor in Australia.

Key to the Species.

- *A.* Peduncles 1-flowered. Stipules semisagittate.
  - *b.* Leaflets 1 pair, rarely 2 pairs, long-linear, glabrous. *magellanica.*
  - *b2.* Leaflets 2 pairs, small, obovate, setula instead of cirrhus. *bijuga.*
  - *b3.* Leaflets 2–3 pairs, linear mucronate. Cirrhi undivided. *solisi.*
- *A2.* Peduncles 1–2-flowered. Stipules semisagittate.
  - *b.* Leaflets 1–2 pairs, obovate, oblong, silky. Cirrhus undivided. *patagonica.*
  - *b2.* Leaflets 3–5 pairs, grass-like. Cirrhus branching. *graminea.*
- *A3.* Peduncles 2-flowered. Leaflets 3–4 pairs, narrow-linear, acuminate. Cirrhus undivided. Stipules narrow. *hookeri.*
- *A4.* Flowers in pairs in axils. Leaflets 2 pairs, oblanceolate, silky. Cirrhus undivided. Stipules ovate. *sericella.*
- *A5.* Peduncles 2–4-flowered. Leaflets 2 pairs (1 pair), linear. Stipules semisagittate. All glabrous. *morenonis.*
- *A6.* Peduncles 3–5-flowered. Leaflets 5 pairs, oblong-basicuneate, mucro instead of cirrhus. Stipules ovate-lanceolate. *ecirrata.*
- *A7.* Peduncles 4–5-flowered. Leaflets 4 pairs, oblong-linear. Cirrhus sometimes divided. Stipules semisagittate-subulate. Pubescent. *vicina.*
- *A8.* Peduncles many-flowered. Stipules semisagittate.
  - *b.* Cirrhi undivided. Leaflets 5 pairs, elliptical. Flowers violet. *darapskyana.*
  - *b2.* Cirrhi divided.
    - *c.* Leaflets 6–9 pairs, elliptical. Flowers yellow, with purple. *macraei.*
    - *c2.* Leaflets 9–10 pairs, oblong-elliptical. Flowers crowded. Calyx-teeth only 2. *nigricans.*

1. VICIA BIJUGA Gillies. (Plate XX.)

Perennial, prostrate, cespitose. *Leaflets* 2 pairs, small, obovate, retuse, not mucronate, sparsely subvillous; with short *setula* ending the rachis. Otherwise like *V. solisi*, but distinct. *Stipules* semisagittate, ovate, without a nectary. *Peduncles* short, puberulous, jointed near their base, 2–3 mm. long, lax. *Calyx* turbinate, puberulous, its teeth subequal, triangular. *Corolla* 6–7 mm. long, ochroleucous. *Ovary* linear, glabrous, 6-ovuled.

(Argentina); S. Patagon., by Rio Chico.

V. BIJUGA LONGIPES Speg.

Lower *leaves* obovate, obtuse, mucronate. *Peduncle* at first short, lengthening after anthesis.

S. Patagon., near Rio Sta. Cruz and R. Scheuen. On pampas by Coy Inlet (O. A. Peterson, "bluish-white" Nov. 18, 1896.) Determined in Royal Gardens, Kew.

2. VICIA DARAPSKYANA Phil.

Pubescent. *Stem* angulate, flexuose, internodes short. *Leaflets* about 5 pairs, elliptical, obtuse, alternate; *cirrhi* simple and bifid. *Stipules* semisagittate, angulate-dentate. Peduncles thick, twice as long as the leaf, many-flowered, in a long, dense raceme. Upper and lateral teeth of the *calyx* narrow, subreflexed, lowest subulate, not as long as the tube. *Corolla* thrice as long as calyx, dry, violet.

Leaves 5 cm. long; stem 1 mm. thick.

(Mountains near Parret); Patagon.

3. V. ECIRRATA Phil.

Annual; appressed-puberulous. *Leaves* with a moderate *mucro* in place of cirrhus; leaflets 5 pairs, oblong, basi-cuneate, obtuse or mucronate. *Stipules* ovate-lanceolate, acuminate. *Peduncles* as long as the leaf, 3–5-flowered. *Calyx-tube* turbinate, its 5 teeth subulate filiform, twice as long as the tube. *Corolla* equal to calyx.

(At Rio de las Nalcas "of some southern province.") Reiche refers this to the Lentil, *Lens esculenta* Mnch., which differs from *Vicia* by its long calyx-teeth, small blue-white petals, and oval, 1–2-seeded pod. Presumably introduced.

4. V. GRAMINEA Smith. (*V. Kingii* Hook. f.)

Sparsely pilose. *Stem* subsimple, angulate, 60 cm. high. *Stipules* semisagittate, the lobules deflexed, the apex acuminate. *Petioles* long, compressed, ending in a branching tendril. *Leaflets* 3–5 pairs, linear-obovate-oblong, entire, apiculate, the apex obtuse or 2-toothed. *Peduncles* silky, 1–2-flowered, much shorter than the petioles. *Calyx* short, silky, its teeth acute. *Immature* legumes pendulous, glabrous.

(Montevideo, Commerson, 1767.) Patagon., by Rio Negro; near Rawson (Dusén); Magellan, Fuegia, at Ushuaia on the Beagle Channel. "*V. kingii* Hook. f. is a depauperate *V. graminea* Smith." A. Franchet in Miss. Sci. du Cap Horn, Bot., p. 330.

(Hook. f. observes of *V. bidentata* Hook. of Chili, *V. graminea*, and *V. patagonica*, that *V. bidentata* is entirely smooth, with leaflets broader and shorter, stipules twice as broad as in *V. graminea*, and tendrils simple; *V. patagonica* agrees with *V. bidentata* in these points except the simple tendrils, and is also distinguished by having few broad leaflets and differently shaped stipules and short, erect petioles.)

5. VICIA HOOKERI Don. (*V. micrantha* Hook. & Arn.)

Annual, villous; *leaflets* 3–4 pairs, narrow-linear, acuminate. *Tendrils* simple. *Stipules* semisagittate, linear, entire. *Inflorescence* shorter than the leaves and with 2 small flowers, 5 mm. *Calyx* short, campanulate, teeth lanceolate, as long as the tube. *Legume* compressed, lanceolate, the sutures hairy. Seeds 6.

Valdivia; Chubut, by Carren-leofú. The Chubut specimens are small, leaflets linear, 3-jugous, pedicels 1-flowered, just surpassing the leaves, calyx-teeth short. (Speg.)

6. V. MACRÆI Hook. & Arn.

Pubescent. *Stem* prostrate, angled. *Leaflets* 6–9 pairs; elliptical, obtuse, shining underneath. *Cirrhi* divided. *Stipules* semisagittate, deeply angulate-toothed. *Peduncles* as long as the leaves, crowded, many-flowered. *Calyx-teeth* short, subequal, the lower slightly larger. *Petals* yellow, purple-variegated. *Legumes* deflex, oblong, glabrous, with long, hairy style.

(Chili, cordilleras); Patagon.

7. V. MAGELLANICA Hook. f.

Glabrous. *Stem* slender, angulate, flexuous, sparsely leafy. *Stipules* semisagittate, their apex and lobule acuminate. *Leaves* remote. *Petioles* long, ending in a cirrhus; *leaflets* 1 pair, rarely 2 pairs; linear-elongate, acuminate. *Pedicels* axillary, solitary, 1-flowered, shorter than the leaf. *Calyx* pubescent, with subulate teeth. *Standard* twice as long.

S. Patagon., near Rio Chico: Magellan, E. Fuegia. (Dusén, chiefly in thickets.)

"*V. magellanica*, *saffordi*, *patagonica*, and *andicola* have pubescent peduncle and calyx, and may be all the same. *V. graminea* is different." (Spegazzini.)

8. V. MORENONIS Harms.

Stem glabrous, flattened-angular. *Leaflets* 4, opposite, subsessile, linear, with a short, obtuse apex. *Stipules* small, semisagittate. *Peduncles*

2–4-flowered, glabrous, with short pedicels. *Calyx* companulate, its teeth broad-ovate, shorter than the tube, acute. *Ovary* glabrous.

Patagon.

VICIA MORENONIS BURMEISTERI O. Ktze. (?).

Leaflets 1-pair.

Patagon.

9. V. NIGRICANS Hook. & Arn.

Pubescent. *Stem* tetragonal. *Leaflets* 9–10, oblong-elliptical, obtuse, alternate; the *cirrhi* divided. *Stipules* semisagittate. Peduncles twice as long as the leaf, many-flowered, the flowers crowded. *Calyx-teeth* 2, the upper obsolete, the lowest subulate, the mid-one exceeding the tube. *Stigma* bearded.

(Chili); N. Patagon., near Lago Nahuel-huapi.

10. V. PATAGONICA Hook. f.

Sparsely pilose. *Stem* erect, angulate, but scarcely winged, sparingly branching. *Stipules* semisagittate, sometimes toothed, their apex and lobule acute. *Leaves* suberect; petiole rather short, angled, with a simple terminal tendril. *Leaflets* 1–2 pairs, alternate and opposite, obovate-oblong, entire, obtuse or retuse, or toothed, silky on both sides. *Peduncles* exceeding the petioles, silky, 1–2-flowered. *Calyx* silky, one third the erect standard.

(See note on *V. graminea.*)

S. Patagon., by Rio Chico; Magellan, E. Fuegia. (Dusén.)

V. PATAGONICA DEPAUPERATA.

S. Patagon., near Rio Deseado, and Isla Pavo by Sta. Cruz.

11. V. SERICELLA Speg.

(*Cracca.*) Perennial, silky, low, prostrate. *Leaves* shorter than the internodes. *Stipules* ovate. *Cirrhus* simple. *Leaflets* mostly 2 pairs, oblanceolate, acutish both ways. *Flowers* of mid-size, mostly in pairs in the upper axils. *Standard* blue, thrice as long as the calyx, and longer than the whitish wings. *Ovary* glabrous.

N. Patagon., valley of Lago Blanco; in Sierra de los Baguales.

VICIA SERICELLA GLABRATA Speg.

Glabrate, rigid. Stipules semiovate, rounded at base. Dry meadows by Rio Chubut.

12. V. SOLISI Phil. (*V. saffordi* Phil.)

Low, branching annual, 15 cm. high, *scarcely* pubescent. *Leaflets* 2–3 pairs, linear, narrower upwards, mucronate. *Cirrhi* simple. *Stipules* narrow, semisagittate, their lobule acuminate. *Peduncle* axillary, short, 1-flowered. *Calyx-teeth* shorter than the tube, cuspidate-triangular. *Corolla* twice as long as calyx.

(Chili); S. Patagon., by Rio Chico; Magellan (Safford); E. Fuegia (Dusén).

"*V. saffordi* and *V. sericella* are allied to *V. bijuga*, but distinct." (Speg.)

13. V. VICINA Clos.

Slightly pubescent, with weak, tetragonal stem. *Leaves* 3–4 cm. long, with about 4 pairs of *leaflets*, often not very opposite, oblong-linear, mucronate, pubescent underneath. *Tendrils* simple or divided. *Stipules* semisagittate-subulate, the auricle weak, horizontal. Inflorescence as long as the leaves, 4–5-flowered. *Calyx* pubescent, the teeth subulate-lanceolate, shorter than the tube. *Corolla* 2–3-times as long as the calyx, light blue. *Ovary* pubescent.

(Chili); Chubut, in fields along Carren-leofú.

V. vicina tricolor; flowers 10 mm.; vexillum and wings blue, orange and white succeeding basewards. Leaves often narrow.

V. vicina azurea; flowers blue; leaves larger and broader and obtuser.

V. vicina pallidiflora; flowers whitish; leaves mediocre.

V. vicina luteiflora; flowers only 6–8 mm. long, somewhat orange, keel yellow; leaves mediocre.

22. LATHYRUS Linn.

Herbs, rarely erect, with pinnate, mostly tendril-bearing *leaves*, and racemose or solitary *flowers*. Characters of *Vicia*, but the *calyx* is mostly oblique, its upper *teeth* shorter, and the *style* is curved, flattened and hairy along its inner side.

Species 110, distributed as *Vicia*.

KEY TO THE SPECIES.

A. Stipules semisagittate.
  b. Peduncles 1-flowered. Stem winged.
    c. Leaflets 1 pair, linear. Cirrhi entire, or divided. Hairy. *campestris.*
    c2. Leaflets few (2) pairs, linear-oblong. Cirrhi 3–4-cleft. Pods reticulate. Glabrous. *cicera.*
  b2. Peduncles 1–3-flowered. Leaflets 1 pair, linear, acute. Cirrhi very short, stipules long. Stem filiform. *subulatus.*
  b3. Peduncles 4-(2–1-) flowered. Leaflets 2–4, linear, or linear-oblong, parallel-veined. Silky. *sericeus.*
  b4. Peduncles many-flowered. Leaflets successively 1–4 pairs. Cirrhi a point below, long and divided above. *macropus.*
  b5. Leaflets 2. Flowers rather large. Silvery, becoming rufous. *tomentosus.*
  b6. Peduncles 6–12-flowered. Leaves 1-ranked. Leaflets 1 pair. Cirrhi undivided. Corolla large, golden. *pubescens.*
A2. Stipules triangular-semisagittate, long. Leaflets linear-lanceolate. Cirrhi trifid. Peduncle 4–8-flowered. *epetiolaris.*
A3. Stipules lanceolate to semi-sagittate. Leaflets 1 pair, linear-oblong, acute. Cirrhi sometimes divided. Peduncles 6–12-flowered. Flowers yellow. *pratensis.*
A4. Stipules sagittate. Leaflets 1 pair, ovate, acute. Cirrhi trifid. Peduncles many-flowered. *nervosus.*
A5. Stipules semi-hastate, large. Leaflets 3–6-pairs, oblong-obovate, mucronulate. Cirrhi branched. Peduncle 6–10-flowered. Purple. *maritimus.*
A6. Stipules ovate-sagittate, large, with large auricle. Leaflets, linear-lanceolate. Peduncles 1-(2-) flowered. *stipularis.*
A7. Stipules ovate, apically 2-lobed. Leaflets few (to 1 pair), elliptic-oblong to lanceolate. Cirrhi trifid. Peduncles 3–4-flowered. *magellanicus.*

1. LATHYRUS CAMPESTRIS Phil.

Pubescent with weak, winged *stem*, 20–30 cm. high. *Leaflets* 1 pair, linear. *Tendrils* simple or divided. *Stipules* semisagittate, longer than the petiole. *Peduncles* 1-flowered, slightly shorter than the internodes. *Calyx* pubescent, its teeth lanceolate-subulate, just longer than the tube. *Legume* linear, pubescent. *Seeds* 7–9.

Valdivia; Chubut by Carren-leofú.

2. L. CICERA Linn.

Rather glabrous annual, with winged *stems* and linear-oblong *leaflets*, cirrhi 3–4-cleft. *Stipules* semisagittate, lanceolate, subciliate, as long as the petiole. *Peduncles* 1-flowered; bractlets minute. Calyx-teeth thrice as long as the tube. Pods reticulate. Seeds trigonal, subtruncate, brown, smooth.

(Europe.)

LATHYRUS CICERA PATAGONICA Speg.

Stems scarcely angled at base, 3-winged upwards. Stipules leaf-like, entire; *leaflets* 2, linear-lanceolate, entire, pale underneath. *Corolla* yellowish and glabrous, scarcely equalling the calyx-teeth. *Pod* erect, glabrous, about as long as the leaflets, 8–12-seeded, its apex rostrate-incurved.

N. Patagon., escaped.

3. L. EPETIOLARIS Clos.

Perennial, smooth, blackish in drying. *Stems* 1–2 meters high, tetragonal, scarcely winged. *Leaves* short-petioled; *leaflets* linear-lanceolate, 5–7 cm. long. *Tendrils* long, trifid. *Stipules* triangular, semisagittate, 3–4 times as long as the petiole. *Inflorescence* 10–15 cm. long, 4–8-flowered at its end. *Calyx-teeth* linear-acute, exceeding the tube, and the lowest the longest. *Corolla* purple-violet. *Legume* linear, compressed, as large as a leaflet, smooth. *Seeds* numerous.

(Chili); Chubut, by Carren-leofú. "The Patagonian forms have the stipules sagittate, not semisagittate." (Speg.)

4. L. MACROPUS Gillies.

Robust plant, laxly pubescent, *stem* angulate and striate. Lower *leaves* with 1, the upper successively with 2–4 pairs of lanceolate *leaflets*, ending in a stiff point. *Stipules* semisagittate, linear-lanceolate, in the upper leaves shorter than the petioles. *Tendrils* of upper leaves long and parted. *Inflorescence* 3–4 times as long as the leaves. *Flowers* numerous, the rachis and calyx pubescent. *Calyx-teeth* acuminate, one of them subulate. *Corolla* large, blue (?). *Legume* unknown.

(Chili); Chubut, by Carren-leofú (stipules of these sagittate, not semisagittate).

5. L. MAGELLANICUS Lam.

Glabrous, blackish, suberect. *Stipules* broad-ovate-oblong, ending in 2 divaricate lobes. *Cirrhi* trifid. *Leaflets* 1 pair, 25–50 mm. long, elliptic-oblong or lanceolate, apiculate, 3–5-nerved. *Peduncle* longer than the leaf, with 3–4 flowers towards its apex.

A beautiful vetch, loving the sea-coast.

N. Patagon., by Nahuel-huapi; Magellan, N. and E. Fuegia. (Dusén.)

LATHYRUS MAGELLANICUS GLADIATUS (Hook.) O. Ktze.

Leaflets very narrow, acuminate.

Patagon.

L. MAGELLANICUS GLAUCESCENS Speg.

Plant green-glaucescent, not black in drying. *Leaflets* often elliptical-mucronulate, nervulose.

S. Patagon., by Rio Sta. Cruz, R. Gallegos.

L. MAGELLANICUS OXYPHYLLUS Speg.

Low, glabrous, green-glaucescent. *Stipules* sagittate, elongate. *Leaflets* 1 pair, lanceolate or longer, long-mucronate.

At Killik Aike, by Barnum Brown.

L. MAGELLANICUS SUBSESSILIFOLIUS O. Ktze.

Petioles of all the leaves 5 mm. long.

Patagon.

6. L. MARITIMUS Big.

Glabrous, stout, decumbent; *stems* angulate. Stipules large, semihastate. *Leaves* subsessile, *cirrhi* branched. *Leaflets* 3–6 pairs, oblong-obovate, mucronulate. *Peduncles* short, with 6–10 purple flowers. *Legume* linear-oblong, veiny.

(Eurasia and N. Amer.); Cape Tres Montes.

7. L. NERVOSUS Lam.

Glabrous. *Stems* subsimple, striate. *Petioles* very short; cirrhi trifid; *stipules* sagittate, nervose. *Leaflets* 1 pair, ovate-acute, veiny, exceeding the internodes. *Peduncles* many-flowered. *Legumes* linear, long, glabrous.

(Montevideo); S. Patagon., Valley of Rio Gallegos (Nordenskj.); var. by Rio Sta. Cruz.

8. L. PRATENSIS Linn.

Weak, straggling perennial, mostly glabrous. *Stems* sharply angulate. *Stipules* lanceolate to semisagittate, nearly as long as the leaflets. *Leaflets* 1 pair, linear-oblong, acute. *Cirrhus* simple or branched. *Racemes* exceeding the leaves, with 6–12 yellow flowers. *Legumes* linear, glabrous, veiny.

(Eurasia and N. Amer.), S. Patagon., by Rio Chico de la Sta. Cruz. (Hatcher.)

9. LATHYRUS PUBESCENS Hook. & Arn.

Stem tetragonal or 2-edged, winged, slightly puberulous. *Leaves* 1-ranked; *stipules* semisagittate, scarcely as long as the petiole; *cirrhi* long, simple. *Leaflets* 1 pair, large, narrow-lanceolate. Peduncle scarcely exceeding the internode, pubescent upwards, 6–12-flowered. *Calyx* pubescent, teeth acute. *Corolla* thrice as long, golden. Young *legume* linear, flat, tomentose.

Through all Patagonia and Chonos Archipelago to Bolivia. "Alverjilla."

10. L. SERICEUS Lam. (*L. tomentosus* Vog. non Lam.)

Rather *stout* and woody, tomentose-silky. *Stem* 4-angled, striate. *Leaves* ending in a stout, simple tendril. Stipules semisagittate, equalling the leaflets and exceeding the petiole. *Leaflets* 2–4, linear or linear-oblong, paralled-veined. *Peduncles* mostly 4-flowered, or 1–2-flowered. *Legume* linear, 3–5 cm. long, rather inflated.

N. Patagon., by Rio Negro and northwards.

11. L. STIPULARIS Presl.

Smooth, with weak, tetragonal *stem.* *Leaflets* linear-lanceolate, mucronate. *Stipules* large, ovate-sagittate, with long, descending auricles, narrow, acute. *Peduncles* 1-(2-)flowered, at first shorter than the stipules, at length elongating.

Patagon., by Rio Chubut and Carren-leofú.

L. STIPULARIS PATAGONICUS Speg.

Leaflets more acute and smaller.

12. L. SUBULATUS Lam.

Pilose. *Stems* cespitose, filiform, tetragonal. *Leaves* shortly petiolate, with very short tendrils. *Leaflets* 1 pair, linear, acute. *Stipules* semisagittate, linear, nearly as long as the leaflets. *Peduncles* 1–3-flowered.

Calyx-segments narrow, acute, subequal, as long as the tube. *Flowers* purple, not large.

(Montevideo; Argent.); Patagon.

13. LATHYRUS TOMENTOSUS Lam.

Rufous-tomentose perennial, with tetragonal, striate *stem*. Leaves with petioles exceeding the 2 leaflets, and semisagittate stipules shorter. *Calyx-teeth* subequal, lanceolate. *Legumes* linear, silky.

Styles long, contorted at base, linear-spatulate.

(Argentina); Patagon., near Rawson (Dusén); in N. Patagon., near Rio Colorado. Appressed-pubescent, silvery when living; larger plant, subscandent, with larger flowers than *L. sericeus* Lam.

23. RHYNCHOSIA Lour.

Mostly trailing or climbing perennials, with 1–3-foliolate *leaves*, having no *stipels*, and with yellow, axillary, *racemed* flowers. *Leaflets* usually resinous-dotted. *Calyx* 4–5-lobed, slightly 2-lipped. *Keel* incurved at the apex, or falcate. *Stamens* diadelphous, 1 and 9. *Legume* short, 1–2-seeded.

Species 100, in warm and temperate regions.

R. SENNA Gill.

Puberulous; stem scarcely twining, terete. *Stipules* subulate, rigid. *Leaflets* 3, broad-ovate, mucronate, subcordate, 3-nerved, pinnately veined, the lateral ones smaller, as long as the petiole. *Peduncles* solitary in the axils, rarely 2, each 1-flowered, exceeding the petioles. *Calyx-segments* subulate, as long as the petals. *Legume* oblong, attenuate downwards, velvety.

(Argentina); N. Patagon., by Rio Negro. A variety with broad ovate leaflets extends from Texas to the borders of Patagonia.

Family 53. GERANIACEÆ. Crane's-bill Family.

Herbs, with alternate or opposite, usually stipulate, *leaves;* and axillary, hermaphrodite *flowers*, having hypogynous, 5-merous *calyx* and *corolla*, the petals not united. Stamens as many, or 2–3 times as many, as the petals. *Carpels* usually 5, around a central axis, each 1–2-seeded. *Styles* joined with the axis, so as to form a beak.

Species 450, in temperate regions; most in South Africa.

Key to the Genera.

1. Stamens 10, sometimes 5. Styles not hairy on inside. *Geranium.*
2. Stamens 5. Styles bearded on the inside. *Erodium.*
3. Stamens 10. Style very short. Calyx involucrate. *Wendtia.*

1. GERANIUM Linn. Crane's-bill.

Leaves palmately lobed or divided. Peduncles 1–2-flowered. Flowers regular. Stamens 10 (rarely 5), usually alternately unequal. Carpels 2-ovuled, becoming 1-seeded in fruit. Styles naked on the inside, at length breaking away upwards from the axis and suspending the mericarps.

Species 170, in temperate regions, and on tropical mountains. Found southwards as far as the Strait of Magellan, and a few in Australia and New Zealand.

Key to the Species.

- *A.* Stemless, with 1-flowered scapes and reniform, 5–7-partite leaves.
  - *b.* Scape short, velvety. Leaf-segments 3–5-cleft. *acaule.*
  - *b2.* Scape very short; it and the calyx silvery. *sessiliflorum.*
- *A2.* Stems short. Leaves 5-partite, the parts 3-cleft. Peduncle rather long, 1-flowered. *moorei.*
- *A3.* Stems prostrate, numerous from a fusiform root. *andinum.*
- *A4.* Stems developed.
  - *b.* Flowers geminate.
    - *c.* Leaves opposite, semi-orbicular, partite. *melanopotamicum.*
    - *c2.* Leaves rounded.
      - *d.* Leaves 5-lobed, lobes 5-cleft. Villous. *berterianum.*
      - *d2.* Leaves 5–7-partite, the parts 3–5-cleft. Petals shorter than calyx. *dissectum.*
    - *c3.* Leaves 7–8-lobed, repeatedly trifid. Petals exceeding the calyx. *core-core.*
  - *b2.* Stem-leaves rounded, 5-partite, the parts 3–5-cleft. Petals thrice as long as the sepals. *magellanicum.*
  - *b3.* Leaves basi-truncate, 5-lobed, the lobes 3-cleft. Petals as long as the sepals. *intermedium.*
  - *b4.* Flowers umbellate. Leaves bipinnatifid. *arenicolum.*

1. G. ACAULE Willd.

Stemless perennial, with radical, 1-flowered *peduncle*, much shorter than the petioles. *Leaves* reniform, 5–7-partite, the lobes 3–5-cleft.

Patagon., Chubut, mountain meadows; "a form with a finely appressed pulverulent velvet." (Speg.)

2. GERANIUM ANDINUM Ph.

Root fusiform, thick, perennial, rufescent, bearing at its apex numerous prostrate stems.

Patagon., Chubut, mountain meadows.

3. G. ARENICOLUM Steud.

Rhizome thick, woody. *Stems* branching from the base, leafy. *Leaves* bipinnatifid, setulously pilose, segments incised, acutely serrate. *Peduncles* solitary, exceeding the leaves, flowers 4–6 in an *umbel*. *Calyx* pilose-setose.

Punta Arenas. . "Seems to be an *Erodium* from its leaves and umbels; possibly *E. cicutarium*."

4. G. BERTERIANUM Colla.

Perennial, with long and fleshy napiform root and ascending or erect *stems*. The whole plant villous, with simple and glandular hairs. *Leaves* orbicular, 5-lobed, lobes cuneiform and 5-cleft; the segments linear and subobtuse. *Peduncles* 2-flowered. *Sepals* oval, aristate, villous, and ciliate. *Petals* twice as long, rose-colored, entire or slightly cut. *Carpels* villous. *Seeds* smooth. Plant 30–60 cm. high.

(Chili), Patagon., by Rio Chubut, and Carren-leofú. (The Patagonian specimens have no glandular hairs.) "Are they *G. submolle* Steud., whose roots are not known?" (Speg.)

5. G. CORE-CORE Steud.

Root subligneous. *Stem* branching, covered like the leaves with appressed hairs. *Leaves* dark green, with 7-8-lobules, repeatedly trifid, obtuse and toothed occasionally, all shining or pubescent. *Peduncles* 2-flowered. *Calyx* appressed-hairy, with rather long awns. *Petals* slightly cut, exceeding the calyx. *Carpels* hairy. *Seeds* finely reticulate. Height 80 cm.

(Chili); Patagon., by R. Sta. Cruz, R. Chubut, and Carren-leofú.

6. GERANIUM DISSECTUM Linn. (*G. patagonicum* Hook. f.)

Erect annual, with white spreading *hairs*. *Leaves* long-petiolate, orbicular, 5–7-partite, and the parts 3–5-cleft. *Petioles* and pedicels retrorsely hispid. *Peduncles* 2-flowered. *Petals* emarginate, nearly as long as the awn-bearing calyx, purple. *Seeds* reticulate.

N. Patagon., common about Bahia Blanca, called "alfilerillo," as is *Erodium*. (J. Ball.) S. Patagon., by Puerto Deseado; Magellan. (Eurasia; Australia.)

G. DISSECTUM PATAGONICUM Hook.

Differs from the type by having a perennial root; spreading *villosity* of all parts; lobes of *leaves* less narrow and deep; carpels more glabrous.

S. Patagon., common everywhere; Chubut, Tekachoique.

7. G. INTERMEDIUM Bert.

Stem erect, branching, striate, subvillous. *Leaves* very long-petiolate, basally truncate, rather glabrous, 5-lobed, their lobes trifid, with rounded, mucronulate segments. *Petals* entire, equalling the short-awned, villous calyx. *Carpels* glabrous.

(Chili); N. Patagon., by Rio Negro.

8. G. MAGELLANICUM Hook. f.

Stem erect (?), branching upwards, hirsute with retrorse *hairs*. *Stem-leaves* hairy, long-petiolate, orbicular, 5-partite, the parts cuneate, 3–5-cleft, the segments linear-oblong, obtuse and apiculate. Peduncles long. *Flowers* large, with silky, acute, awned *sepals*. *Petals* obovate-cuneate, notched, thrice as long as the sepals. *Ovaries* silky.

Patagon., near Rawson; W. Patagon.; Magellan; Fuegia, E. and W., and at Ushuaia. (Dusén.)

9. G. MELANOPOTAMICUM Speg.

(*Columbinum.*) Perennial, subglabrous. *Rhizome* thick, with long, slender branches. *Leaves* opposite, finely and long-petiolate; semiorbicular, basitruncate, 3–5-partite; the lateral segments bifid, the median trifid, lobes oblanceolate, deeply 3-cleft at apex, above minutely appressed, subpuberulous, underneath glabrous, except the rough nerves. *Flowers* geminate, on longish peduncles. *Sepals* elliptical-lanceolate, equalling the rose petals, long-awned and puberulous. *Fruit* smooth, pubescent. Seeds reticulate.

N. Patagon., in wet, moist shrubberies along Rio Negro. Subscandent, 25–100 cm. long.

10. GERANIUM MOOREI Phil.

Cespitose perennial, with a thick, woody root. Stems short, equalling the radical leaves, and like them rather glabrous. Leaves mostly 5-partite, the segments trifid. Peduncle 1-flowered, much exceeding the leaves. Sepals lanceolate, awned, pilose, half as long as the retuse petals. Carpels hirsute.

(Chili); S. Patagon.; in marshy places near Rio Sta. Cruz.

11. G. SESSILIFLORUM Cav.

Stemless perennial, with thick descending rhizome. Leaves radical, reniform, 5–7-partite, long-petioled, the petioles 2 cm. long, retrorsely pilose. Scapes very short, 1-flowered; they and the calyx silvery. Petals obcordate, twice as long as the sepals.

(Chili; Australia); S. Patagon., on Cordilleras (Hatcher, "pink"); Cabo Negro; Magellan. By Rio Gallegos, and Rio Scheuen, and Rio Chubut.

2. ERODIUM L'Her. Stork's-bill.

Flowers with the 2 upper petals slightly smaller than the other 3: *Stamens* 5, with 5 staminodes and 5 glands. *Beak* ending in the stigmas; the *styles* separating at maturity, bearded on the inside.

Species 60, in temperate and warm regions.

1. E. CICUTARIUM (L.) L'Her.

Tufted, branched, 15–30 cm. high. Basal and lower *leaves* petioled, pinnate, the pinnæ pinnately parted or lobed. Upper leaves similar but sessile. *Peduncles* exceeding the leaves, umbellately 2–12-flowered. *Flowers* purplish, 8 mm. broad. *Beak* long; its branches at length coiling together.

(Common in Eurasia; spreading over the United States to the Pacific coast, also over Argentina and other parts of S. Amer.); N. Patagon., S. Patagon.;

(O. A. Peterson) on pampas near Coy Inlet, in fruit Nov. 23, 1896. Magellan (Dusén). Called Alfilerillo in N. Patagon. "It is considered useful for cattle in Paraguay, Patagonia, and neighboring regions, as it springs up fresh after each fall of rain. Doubtless introduced from Europe, it has spread nearly over all South America. In Peru it extends from the coast to 3,700 meters high." (J. Ball.) A. Gray remarks on the hygrometric twisting of the "tail" of its carpels, as pushing them into the ground. Its taproot being long, strong, yet not thick, may promote its speedy reappearance on the return of rain.

ERODIUM CICUTARIUM ARENICOLUM (Steud.) Speg.

Root woody; all parts spreading, white hispid. Scarcely a variety, rather a mere form.

S. Patagon., common everywhere.

2. E. MALACHOIDES Willd.

Stem herbaceous, branching, somewhat hairy. *Leaves* cordate, undivided or 3-lobed, obtuse, dentate. *Peduncles* many-flowered. *Petals* as long as the calyx.

(Europe; Canary Is.); Patagon., near Carren-leofú.

3. WENDTIA Meyen.

Calyx with an involucre; *sepals* 5; *petals* 5. *Stamens* 10. *Flowers* pediceled, solitary or crowded, yellow. *Carpels* mostly 3. *Style* very short, with 3 stigmas. *Capsule* loculicidal, also the loculi springing upwards from the top of the axis. *Leaves* silky, lobed, or partite.

Species 3, Andine. (Fig. of *W. reynoldsii* in Eng. & Prantl, iii, 4, p. 12, D, E, F.)

W. TRIGYNA PŒPPIGIANA (Klotzsch) O. Ktze.

Erect. *Leaves* very numerous, 5-cleft. Flowers small.

N. Patagon., in rocks near Lago Nahuel-huapi.

Family 54. OXALIDACEÆ. Wood-sorrel Family.

Mostly herbs, with acid sap and palmately 3-foliolate, or digitately, or pinnately parted *leaves*, having long petioles.

Flowers perfect, regular, 5-merous; *petals* mostly showy. *Stamens* 10–15, united at base, hypogynous. *Ovary* 5-lobed, with 5 *styles*. *Seeds* with fleshy endosperm.

Species 270, mostly tropical.

OXALIS Linn.

Stamens 10. Styles distinct. *Petals* often slightly cohering at base. *Stemless* perennials, with bulbous or fleshy rhizome; or caulescent with alternate, exstipulate *leaves* and axillary *peduncles*.

Species 250, cosmopolitan, having many in South Africa, Brazil, Chili and Mexico; 1 in Norfolk I., but none reported from Australia, Tasmania, or New Zealand.

KEY TO THE SPECIES.

- *A.* Leaflets 3.
  - *b.* Glabrous.
    - *c.* Rootstock thick, scaly. Leaves radical, petioles 12 mm. Leaflets round-cordate, 6 mm., fleshy. Flowers white. *magellanica.*
    - *c2.* Tubers. Leaflets obcordate, dotted black; 6–12 small, red, umbellate flowers. *rubra.*
  - *b2.* Pubescent.
    - *c.* Bulbous root; stem short, scaly. Leaflets obcordate. Flowers 2–3, pink. *gayi.*
    - *c2.* Stem low, leafy. Leaflets broad, obcordate, very hairy underneath. Peduncle with 2 leaves and lax panicle. *laxa.*
    - *c3.* Leaves rosulate: leaflets obcordate, basi-cuneate. Peduncles many-flowered. *valdiviensis.*
  - *b3.* Villose or tomentose-woolly.
    - *c.* Root not tuberous.
      - *d.* Leaflets obcordate. Flowers large, yellow, 1–2 on long peduncle. *amara.*
      - *d2.* Leaflets cordate, 2-lobed. Many 2-flowered peduncles. Creeping, with leafy branches. *nahuel-huapiensis.*
    - *c2.* Root tuberous.
      - *d.* Branching stems, rosulate-leafy. Leaflets cuneate-bifid, with linear segments. Umbel of lilac flowers. *stenophylla.*
      - *d2.* Leaves radical; leaflets round-ovate, emarginate. Scapes with many blue flowers. *floribunda.*
      - *d3.* Flowers yellow, violet and blue. "Springs up after rains." *darwinii.*
- *A2.* Leaflets 8 or more.
  - *b.* Glabrous. Flowers solitary.
    - *c.* Stipe creeping from scaly base. Leaflets 9, obcordate, deeply partite. Flower large, convolvuliform, pink. *enneaphylla.*

c2. Thick, scaly rhizome.
  e. Leaflets 11–13, linear. Flower large, convolvuliform, pink, with blue lines. *laciniata.*
  e2. Leaflets 8–12, obcordate, emarginate. *loricata.*
b2. Glabrous. Fowers 2. Leaflets 12. *adenophylla.*
b3. Pubescent. Rhizome fleshy, scaly. Stemless. Leaflets 12, linear. Flowers solitary. *squamosa-radiosa.*
b4. Tomentose. Creeping, scaly rhizome. Stemless. Leaves 10–14 divided, long-petioled. Flower solitary, rose to white-blue. *patagonica.*

1. Oxalis adenophylla Gill. (*O. bustillosii* Phil.)

Glabrous. Caudex almost none, very leafy at the apex. Petioles long, slender. Leaflets about 12, sessile, glabrous, obcordate, the lobes divergent, fleshy, attenuate at base, often violaceous. Peduncles nearly as long as the petioles, 2-flowered. Pedicels incurved in fruit. Sepals unequally broad, one sixth the length of the violet corolla, at length enlarged. Handsome.

(Chili); Patagon., along Rio Chubut; Carren-leofú; Teka-choique. "Has at first an ovate bulb, afterwards changing to a rhizome." (Speg.)

2. O. amara St. Hil.

Without tuberous rhizome. Stem suffruticose, prostrate. Leaves trifoliate; leaflets sessile, obcordate, villous, hispidly ciliate. Peduncles axillary, 1–2-flowered, longer than the leaves. Flowers large, yellow. Stamens all exceeding the styles. Cell of ovary 1-seeded.

Stigmas small, capitate.

(S. Brazil; Argentina); N. Patagon.

3. O. darwinii Ball (nomen).

Springs up after rains, and is variable in the color of the flowers.

Forms with yellow, others with violet and with blue flowers. Its tuberous root is eaten. "Vinagrillo" (Span.), "Tschilki" (Araucanian).

Common at Bahia Blanca and N. Patagon. (J. Ball.)

4. Oxalis enneaphylla Cav. (*O. pumila* d'Urv.)

Rhizome tomentose at top. *Stipe* creeping, with interruptedly scaly base. *Leaves* long-petioled, with 9 glabrous or pubescent, obcordate-cuneate, deeply partite leaflets. Peduncles as long as the leaves, 2-bracteolate, bearing 1 rather large flower, of convolvulaceous form, pink with lutescent lines. Sepals silky or villous. *Stamens* 10, alternately long and short. *Styles* hirsute, capitate.

Falklands; S. Patagon., Cordilleras (J. B. Hatcher); N. and E. Fuegia (Dusén).

"Rootstock fleshy, edible. The pride of the Falklands, covering banks by the sea with a mantle of snowy white during the spring month of November. The plant is an excellent anti-scorbutic and an agreeable potherb, though too acid except in tarts and puddings." (J. D. Hooker.) Hatcher's "mountain form" has the petioles 10 cm. long, and lilac flowers.

5. O. FLORIBUNDA Lehm.

Tomentose. *Roots* tuberous. *Leaves* radical; *leaflets* 3, round-obovate, emarginate. *Scape* many-flowered. *Sepals* hoary; *petals* blue. *Stamens* exceeding the styles.

(Brazil); N. Patagon. Called by the Spaniards and Araucanians by the same trivial names as *O. darwinii;* and its roots similarly eaten.

6. O. GAYI (Gay) Macl. (*O. articulata* Gay, non Savign.)

Pubescent. *Bulbous*, with fibrous roots. *Stem* scaly, very short. Petioles puberulous, very short. *Leaflets* 3, sessile, obcordate, deeply emarginate, hairy on both surfaces. *Peduncles* radical erect, 16–25 cm. long, 2–3-flowered. *Flowers* pink, on slender pedicels. *Calyx* not half as long as the petals. *Ovary* glabrous. *Seeds* numerous.

(Chili); N. Patagon., by Rio Negro.

(*O. articulata* Sav. has the *root* nodose-articulate, the flowers yellow, 5–6 on an umbelliferous scape; and is found at Montevideo. The Patagonian plant here called *O. gayi*, was described by Gay, who supposed it to be the *O. articulata* of Savigny.)

7. O. LACINIATA Cav.

Rootstock with continuous scales, white, fleshy. *Petioles* 5–6 cm. long; *leaflets* 11–13, linear, acute, glabrous. *Scapes* shorter than the petioles, 1-flowered. *Corolla* of form of *convolvulus*, 2 cm. long and broad, thin, pink with bluish stripes. (Fig. 76.)

S. Patagon., by Hatcher at Cape Fairweather, and at Coy Inlet, Oct.–Nov., 1890, by Dusén at Sta. Cruz. It and *O. enneaphylla* form one section by reason of their edible root-stock. Some of the flowers are long-styled, with short and medium stamens; and others are short-styled and long-staminate. (G. M.)

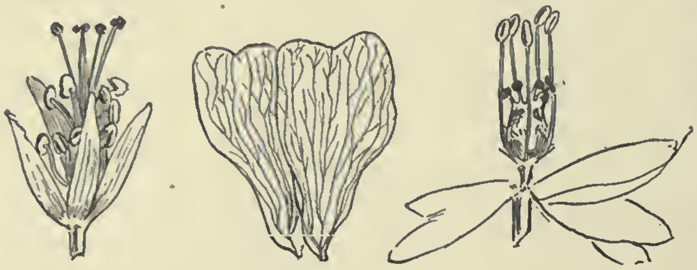


Fig. 76.

Oxalis laciniata. — Petals (in center); sepals and essential organs of long-styled flower (on left): of short-styled flower (on right).

The leaves of B. Brown's specimens have petioles 8–10 cm. long.

8. Oxalis laxa Hook. & Arn. (*O. alsinodes* Walp., *O. micrantha* Bert.)

Stem low, simple, leafy. *Leaflets* 3, broad-obcordate, slightly hairy-ciliate on upper, and densely so on the lower surface; petioles hairy. *Peduncles* twice as long as the leaves, hairy, bearing a lax, apical *panicle.* *Sepals* hairy, narrow-lanceolate.

(S. Chili); Chubut, in hilly parts.

9. O. loricata Dusén.[1]

Rhizome thick, totally covered by persisting, suborbicular, imbricating scales, the uppermost being intermixed with small, membranaceous ones.

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[1] O. loricata Dusén n. s.

Rhizoma durum, robustum, usque ad 12 mm. crassum, superne pauciramosum, tota longitudine squamatum; *squamæ* diutissime imbricatæ, fusco-brunneæ, fere orbiculares, usque ad 4.5 mm. longæ et 4 mm. latæ, valde concavæ, carnosæ, glaberrimæ, juniores saltem apicem versus subcarinatæ, omnes minute apiculatæ, supremæ squamis membranaceis, lanceolatis, glaberrimis, integerrimis, squamis carnosis sublongioribus vel plerumque subbrevioribus, late uninervosis intermixtis; *folia* radicalia, usque ad 12 apice rhizomatis fasciculatim egredientia, petiolis gracilibus, glaberrimis, usque ad 7 cm. longis, apice rosulatim foliosis; *foliola* 8–12, conduplicata, emarginata, planefacta, obcordata, usque ad 11 mm. longa et 7 mm. lata, utroque latere siccitate minutissime scrobiculata; *pedicelli* petiolis æquilongi, glaberrimi, uniflori, circiter 15 mm. infra florem bracteis binis, breviter ovatis, subacutis, margine pilosis prædití; sepala lanceolata vel late lanceolata, glaberrima; cætera ignota.

Hab. Patagonia australis, Cerro Toro, supra terminum silvæ (19/3, 1897); et secus Rio Chubut.

Leaves about a dozen, arising fasciculately from the top of the rhizome; leaflets 8–12, conduplicate, emarginate, obcordate, all glabrous, but finely scrobiculate when dry. Pedicels as long as the slender petioles, 7 cm., glabrous, 1-flowered with a pair of ovate, hairy-margined bracts near the top. Sepals lanceolate or a little broader, glabrous. Cetera?

S. Patagonia, at Cerro Toro.

10. OXALIS MAGELLANICA Forst.

Stemless, with thick, scaly *rootstock*, 5 cm. long, and radical trifoliolate, stipulate *leaves*, petioles 12 mm. long. *Leaflets* round-cordate, 6 mm. long, fleshy, paler beneath. *Scape* strong, as long as the petioles, 2-bracteolate beneath the flowers. *Sepals* broad-oblong, retuse, one third shorter than the white *petals*.

Small; allied to *O. acetosella*.

Magellan; Fuegia; Cape Tres Montes, at 600 meters elevation. Also in New Zealand.

11. O. NAHUEL-HUAPIENSIS Speg.

Stem creeping, thick, fleshy, woolly. *Cortex* thick, with lax scales; these linear-triangular, produced into fine, leafless petioles. New *branchlets* from the axils of the scales are fasciculately leafy, with long, slender petioles, and *leaflets* 3, deeply cordate, bilobed; their lobes broad, obtuse, thick, glabrous. Numerous 2-flowered *peduncles*. *Flowers* rather small, glabrous.

N. Patagon., shady rocks by Lago Nahuel-huapi.

12. O. PATAGONICA Speg.

Stemless. *Rhizome* creeping, densely clothed below with thick golden scales, above with acute, linear, fuscescent bracts. *Leaves* radical, long-petioled, apically 10–14 divided; the *leaflets* parted to their base, plicate, obovate, subfalcate, densely and appressedly tomentose. *Scapes* scarcely equalling the petioles, with a solitary, large, rose to whitish-blue *flower*.

S. Patagon., in sandy hills near Rio Sta. Cruz (Speg. & O. A. Peterson); by Rio Gallegos and in Sierra de los Baguales. "Is it *O. squamoso-radicosa* Steud., with non-woody root scales or a more villous form of *O. enneaphylla* Cav.?" (Speg.)

13. OXALIS RUBRA St. Hil.

Root tuberous, obovate. Leaves radical, trifoliolate. Leaflets obcordate, smooth, full of black dots. Scape smooth, bearing a simple, 6–12-flowered umbel, with a short involucre. Flowers small, red; petals entire. Styles exceeding the stamens. Carpels 4–5-seeded.

(Brazil); N. Patagon., by Rio Negro.

14. O. SQUAMOSO-RADICOSA Steud.

Rhizome soft-fleshy, covered by sublignescent scales. Stemless. Leaves radical, on slender petioles, unifoliate (multifoliate?) spreading at the apex. Leaflets less than 12, equal, linear, pubescent. Flower solitary, with a small, ovate bract. Calyx-segments lanceolate, many times shorter than the petals.

Magellan, in meadows.

15. O. STENOPHYLLA Speg.

Root tuberous, obovate, its apex many-headed; the branches apically obovate-scaly, rosulate-leafy. Leaves long-petioled, trifoliolate. Leaflets cuneate, deeply bifid; their segments linear-obtuse. Peduncles slender, often exceeding the leaves, trichotomously umbellate. Flowers mid-sized, pale lilac.

N. Patagon., common by Rio Negro.

16. O. VALDIVIENSIS Barn.

Stem low, leafy. Petioles 8–14 cm., more or less hairy. Leaflets 3, wide, obcordate, basicuneate. Scapes 8–25 cm., with many flowers on 5 mm. petioles. Sepals naked, obtuse; petals 4 times as long. Style hairy. Capsule-loculi 3–4-seeded.

(Chillan); Chubut, near Cholila.

O. VALDIVIENSIS HUMILIS Speg.

Only 5–10 cm. high; leaves thickish, glabrous. Scapes scarcely exceeding the leaves.

Chubut, in dry places near Cholila.

Family 55. TROPÆOLACEÆ. Nasturtion Family.

Herbs, often climbing, with peltate or partite *leaves* and axillary, showy, irregular *flowers*. *Sepals* 5, the posterior spurred. *Petals* 5, the upper 2 unlike the others. Stamens 8, hypogynous. *Carpels* 3, syncarpous, each *1-seeded.*

Species 35, in mountain regions from Mexico southwards.

TROPÆOLUM Linn. Nasturtion.

Flowers irregular; posterior *sepal* spurred. *Petals* lightly perigynous, the posterior pair unlike the others.

1. T. PATAGONICUM Speg.

Minute, glabrous, with peltate-partite *leaves*, on very short petioles. *Leaf-segments* 4, small, elliptic-orbicular, slightly unequal, thick, glaucous. *Flowers* somewhat orange; mediocre, axillary, solitary, with long peduncle and short spurs.

Patagon., Chubut, on dry hills, by Lago Colu-huapi, and along Rio Chubut. "Roots white, with fusoid or cylindraceous tubers, edible and called *Chalias.*" (Speg.)

2. T. PENTAPHYLLUM Lam.

Tuberiferous. Leaves 5-parted. Flowers solitary in the axils. *Calyx* subvalvate; the 3 anterior petals all, or 1 or 2 wanting. *Fruit* berry-like, of 3 fleshy blackish-violet 1-seeded divisions; edible.

(Chili; Brazil); Patagon. (see *Magallana*).

3. T. POLYPHYLLUM Cav.

Tubers none. *Leaves* peltatisect, long-petioled, the segments 5–10, oblong or obovate, subdentate, basicuneate. *Petals* 5, unguiculate, rather exceeding the calyx, obtuse, entire, yellow. Annual.

(Andine region.)

T. POLYPHYLLUM INCISUM Speg.

Lobes of the very glaucous *leaves* broad-obovate, mostly complicate, more or less pinnately incised. *Root* thick, branching, 50–150 cm. deep, with scattered fusoid to cylindraceous *tubers*, rather insipid.

Chubut, near Teka-choique and Nafofo-cahuello.

TROPÆOLUM POLYPHYLLUM MYRIOPHYLLUM P. & E.

Stem slender; lobes of leaves lanceolate or linear, often again lobed. (Chili); Patagon., Chubut.

MAGALLANA Cav. (sub *Tropæolum* auct.)

Calyx-lobes, the 2 anterior deeply parted; 3 posterior connate but 3-toothed. *Stamens* united at very base. *Fruit* 3-winged, abortively 1-seeded.

M. PORRIFOLIA Cav.

Annual, climbing on hedges. *Leaves* 3-partite; their lobes linear, entire. "*Root* with globose or ellipsoid tubers, white inside." (Speg.)

S. Amer., to Puerto Deseado in S. Patagon., "not rare in gravels along Rio Sta. Cruz, in 1882 (C. Speg.) and San Julian, in 1882 (Torini del Furia)." Valley of Rio de Mayo. (Bentham and Hooker regard it as a depauperate form of *Tropæolum pentaphyllum* Lam., described with an alien fruit.)

Family 56. ZYGOPHYLLACEÆ.

Usually shrubs, with opposite, stipulate, pinnate or 2–3-foliolate *leaves*, the leaflets entire; and with perfect, 5-merous *flowers* on axillary peduncles, sometimes apetalous. *Stamens* 1–3 times as many as the sepals, hypogynous. *Ovary* 4–12-celled; *style* simple. *Fruit* mostly capsular, dividing into segments. *Seeds* with or without endosperm.

Species 150 in warm climates.

KEY TO THE GENERA.

A. Filaments with lacerous basal scales. Ovary short-stiped, becoming a 5-winged fruit. Broom-like shrubs. Leaves odd-pinnate. 1. *Bulnesia.*

A2. Filaments with a 2–3-cleft basal scale. Ovary sessile. Fruit 5-coccous, villous. Leaves twice-pinnate. Branches nodose, distichous. 2. *Larrea.*

1. BULNESIA Gay.

Broom-like shrub, with sparse, small, evenly pinnate *leaves*, the leaflets oblong-mucronate. *Stipules* broad, ovate. *Sepals* unequal. *Petals* as long, clawed. *Stamens* 10, the filaments with adnate, basal scales. *Ovules* numerous; mericarps winged, 1-seeded, dehiscing.

Species 6, Chili and Argentina..

(Fig. in Eng. & Prantl, iii, 4, p. 84.)

BULNESIA RETAMA Griseb.

Silky. Peduncles 1-flowered. *Leaflets* 2–3 pairs, deciduous; the internodes long.

(Andes; on dunes and in the campos of Catamarca); N. Patagon.

2. LARREA Cav.

Balsamifluous evergreen, odorous shrubs, with distichous, alternate, nodose *branches*, and opposite, even-pinnate *leaves* (often a leaf, simple, 2-toothed) with persistent *stipules*. *Peduncles* interstipular, 1-flowered. *Petals* yellow, larger than sepals. *Stamens* 10, the filaments with a bifid, basal scale. *Ovary* hairy, globose, 5-celled. *Fruit* villous, 5-coccous.

Species 4, Texas to S. Amer.

1. L. AMEGHINOI Speg.

Prostrate, diffuse shrub. *Leaves* pubescent, distichous, opposite, sessile, subelliptical, inequilateral, odd-pinnately lobed; the lobes only 1–2 on each side, obtusish. *Flowers* short-pediceled, subsolitary at apex of branches; *sepals* subobovate, green with yellow border; *petals* oblanceolate, orange. *Carpels* entire.

Patagon., by Golfo de San Jorge; Rio Chubut.

2. L. DIVARICATA Cav.

Leaves sessile, 2-lobed, villous, the lobes deep, lanceolate, divaricate. *Branches* somewhat 4-angled; leaf-scars conspicuous, *sepals* unequal, yellowish. *Ovary* and fruit covered by long hairs. Perennial.

(Argentina, called Jarrilla); Patagon., Chubut, in dry gravelly valleys.

3. L. CUNEIFOLIA Cav.

Leaves villous, simple, subsessile, cuneate, apically 2-lobed, the lobes divaricate-acute, pinnately nerved, with a median seta.

(Fig. in Eng. & Prantl, iii, 4, p. 86.) Argentina to N. Patagon., at confluence of RR. Limay and Neuquen.

4. LARREA NITIDA Cav.

Shrub, 2 meters high, with distichous branches. Glutinous. *Leaves* glabrous, unequally pinnate. Leaflets 5–8 pairs, approximate, linear-oblong, obtuse. *Peduncles* shorter than the leaves. *Carpels* silky.

Argentina and Chili, to N. Patagon. Leaves much used as fodder for horses and mules near Aconcagua. "Poisonous to mules yet medicinal," Reiche; called Jarrilla. By Rio Chubut.

Family 57. POLYGALACEÆ. Milkwort Family.

Herbs (or sometimes in the tropics woody), with alternate or opposite, or whorled, *stipulate leaves*, and zygomorphic *flowers*. The two lateral *sepals* forming large, petaloid "wings." *Petals* 3, united into a tube, which is split dorsally, and adnate to the 8 or 6 *stamens;* these mon- or diadelphous. *Ovary* 2-celled. *Seeds* 1 in each cell, generally caruncled, with or without endosperm.

Species 750, in temperate and tropical regions; several in N., many in S. and W. United States, and Mexico and the Andes.

KEY TO THE GENERA.

(All these are 8-staminate.)

A. Two large lateral petaloid sepals. The dorsal pair of petals small or none. Fruit a loculicidal capsule.
- *b.* Capsule not cuneate. Lateral petals with the longer (ventral) carina coalescing sympetalously, the tube being open dorsad. Seeds arillate, or with long hairs. 1. *Polygala*, p. 546.
- *b2.* Capsule long-cuneate. Lateral petals free from the carina. Seeds non-arillate, with long thick hairs. 2. *Bredemeyera*, p. 550.

A2. Lateral petals wanting (or fused with the carina). Dorsal pair adnate to the staminal tube. Carina free. Fruit indehiscent, a drupe or a samara. 3. *Monnina*, p. 551.

1. POLYGALA Linn.

Herbs, except in tropical climates. Flowers often in spikes, with 2-bracted pedicels. Petals more or less united, the lower one often crested. Stamens about 8, in one or two sets. Cells of fruit 1-seeded.

Species 260, widely distributed. Brazil is headquarters. Few in Australia; none reported from N. Zealand, Falklands, or Fernandez.

KEY TO THE SPECIES.

A. Leaves very narrow.
  b. Leaves and branches, filiform, rush-like. Floral wings white; petals blue. Seeds villous. *stenophylla.*
  b2. Leaves linear-filiform, remote, erect. Racemes spiciform. *patagonica.*
  b3. Leaves narrow-linear, remote dotted. Seeds retrorsely pilose. *variabilis.*
A2. Leaves linear. Racemes terminal, many-flowered.
  b. Leaves acute, margin revolute. Outer sepals whitish. Capsule broad-elliptical. *desiderata.*
  b2. Leaves subobtuse, crispy. Wings obovate, 7-nerved. Capsule attenuate upwards. *gnidioides.*
A3. Leaves oblanceolate or obovate, epiphyll hoary. Heads terminal, few-flowered. External sepals whitish. *œdipus.*
A4. Leaves elliptical-obovate. Racemes terminal, few-flowered.
  b. Flowers only 5 mm. long. Leaves rather broad. *darwiniana.*
  b2. Flowers larger and leaves narrower. *tehuelchum.*
A5. Leaves elliptical, obtuse, thickish, small. Flowers few, subspicate, terminal on the branchlets. *moyanoi.*
A6. Leaves oblong-linear, crowded. Capsule slightly 2-horned. *thesioides.*
A7. Leaves small and acutish on lax branches, or larger and spatulate on spiny branches. Villous plants. *spinescens.*
A8. Leaves cuneate-attenuate, fleshy. Plants prostrate, glabrous. *salasiana.*
A9. Leaves broadly obovate or obtriangular. Racemes few-flowered. Capsule narrowly winged. *oreophila.*

1. POLYGALA DARWINIANA Benn.

Stem woody below, much branching, 5–15 cm. high. *Leaves* narrow-elliptical-obovate, margin slightly glandular. *Racemes* terminal, few-flowered. Pedicels glabrous, bracts ovate, 1 mm. long. *Flowers* as large as the leaves. Outer *sepals* small, upper one larger. *Wings* obovate-cuneate, large.

Near to *P. tehuelchum* (Speg.), but with broader leaves, and much smaller flowers, which are scarcely 5 mm. long. Keel with a beautiful fimbriate crest. Style short, stigma crested like a duck's bill.

S. Patagon., Puerto Deseado. (C. Darwin.)

2. P. DESIDERATA Speg.

(*Orthopolygala, pterocarpa, aspalatoidea.*) Perennial, crisp-pubescent; root vertical, stout, cespitose-branching at top. *Branchlets* fastigiate, crowded, hoary upwards. *Leaves* thickish, crowded, spreading, broad-linear, doubly attenuate, acute, marginally revolute, tomentose in youth. *Racemes* acrogenous, sessile, ovate, many-flowered, with small, white, caducous bracts. *Flowers* mediocre, outer sepals whitish, wings rhomboid-elliptical, 5-nerved, thrice as long as the upper sepal. Superior *petals*, linear, adnate to the staminal tube, with a multifid, cuneate *crest*. *Anthers* pediceled. *Ovary* bilocular, glabrous, style twice as long, z-form; *stigma* cochleate, crestless. *Capsule* broad-elliptical, with persistent wings, 2-seeded. *Seeds* black, glabrous, except on the ventral suture, with no caruncle, but a ring-like umbonule.

Patagon., in rocky plain between San Julian and Rio Deseado.

3. POLYGALA GNIDIOIDES Willd. "Quelen-quelen."

Root thick, tortuose. *Stems* woody at base, erect, branching, subvillous upwards. *Leaves* numerous, sessile, linear, subobtuse, crispy. Racemes terminal, many-flowered, showy. The 3 smaller *sepals* lanceolate, the 2 larger obovate, obtuse, 7-nerved. *Capsule* apically attenuate, basally rounded. Height 10–20 cm.

(Chili); Chubut, at Teka-choique, and Bolson. Allied to *P. moyanoi*, but more leafy, flowers brighter and larger.

4. P. MOYANOI Speg. (*Acanthocladus moyanoi* Speg., *Polygala mayausi* Speg.)

Fruticose, unarmed, intricately- and long-branched, puberulent in youth, at length glabrate. *Leaves* elliptical, obtuse, thickish, sessile or subsessile, small. *Flowers* few, subspicate on the ends of the branchlets. Upper *petals* free, scarcely subadnate at the base, with fimbriate carina. *Capsule* small, orbicular, glabrous, not or scarcely emarginate.

Patagon., in dry meadows by Rio Chubut; near Cabo Raso.

5. P. ŒDIPUS Speg.

(*Orthopolygala, pterocarpa, aspalatoidea.*) Perennial, with vertical straight root, and vermicular-flexuose apex, subterraneously branching with dense fascicles; the branches terete, the underground part with white, spongiose cortex, and leafless; the exposed part densely leafy, glabrescent to subpuberulous. *Leaves* alternate, oblanceolate or obovate, anteriorly round-cuneate to acute, posteriorly long-attenuate, hoary, with straight hairs on the upper surface, glabrous below. *Flowers* few, subcapitulate on ends of the branches, short-pediceled, mediocre. External *sepals* about equal, white, green-carinate, the superior slightly larger, with 3-nerved wings thrice as long. Superior *petals* linear, subsigmoid, obtuse, basally adnate to the staminal tube; *crest* of the carina multifid anteriorly, entire posteriorly. Anthers pediceled. Ovary bilocular, glabrous; style twice as long, sigmoid; stigma cochleate, crestless. Capsule seedless.

Patagon., among basalt cliffs between San Julian and Rio Deseado.

6. POLYGALA OREOPHILA Speg.

(*Orthopolygala*, *pterocarpa*, *aspalatoidea.*) Glabrous perennial, with a deep woody *rhizome*, sending down many filiform, naked, subterranean branches; and others upward, resulately leafy. *Leaves* alternate, somewhat fleshy, broad-obovate or obtriangular, upwards obtusely rounded or truncate-sinuate, downwards long-cuneate. *Racemes* acrogenous, or pleurogenous, sessile, shorter than the leaves, few-flowered. Bracteoles small, subpersistent, white. Flowers mediocre. Outer sepals nearly equilong, the upper suborbicular, thrice shorter than the elliptic, 5-nerved, obtuse wings; superior petals cultriform at their base, slightly adhering to the staminal tube. *Crest* subtriangular, few-cleft; anthers pedicellate; ovary bilocular produced to a style longer than the glabrous crestless stigma. Capsule subelliptical, inequilateral; its margin narrowly winged, shorter than the persisting wings. *Seeds* ovate-subcylindraceous, black, puberulous, not caruncled, the membranes of the strophiole being obtuse and half their length.

Patagon., in mountains by Rio Alumine, Neuquen.

7. P. PATAGONICA Phil.

Branches virgate, simple, or only an apical branch. *Leaves* remote, erect, linear-filiform. *Racemes* spike-like. The lower *petal* keeled. *Ovary* oblong, not emarginate, nor ciliate, plant 16 cm. high.

S. Patagon., by Rio Sta. Cruz; Golfo de San Jorge.

8. P. SALASIANA Gay.

Glabrous. Stems very prostrate. *Leaves* obtusely cuneate, basally attenuate, fleshy. *Branches* few-flowered. Keel of corolla crested. *Capsule* elliptical, scarcely emarginate at top.

(Chili, Andes); S. Patagon., Rio Chico; Valley of the Rio Gallegos, on dry rocky places. (Nordenskj.; near Lago Lacar.)

9. POLYGALA SPINESCENS Hook.

Villous. Stem 10–60 cm. high. *Branches* relaxed with small acutish *leaves*; or rigid, spinescent, cespitose, with larger, spatulate, obtuse leaves. *Capsule* often abortively 1–celled and arcuate-falcate.

N. Patagon.

10. P. STENOPHYLLA A. Gray.

Glabrous, rush-like, 30–60 cm. high, with paniculate, filiform branches. *Leaves* alternate, filiform, the cauline deciduous. *Raceme* terminal; its bracts ovate-scarious. *Wings* ovate-acute, white, as long as the bluish petals. *Seeds* oblong villous.

N. Patagon., by Bahia Blanca by Rio Chubut.

11. P. TEHUELCHUM (Speg. sub *Acanthocladus*).

Small, branching, woody perennial, glabrous, rigid, but not spinose. *Leaves* alternate, elliptic-obovate. *Flowers* few, small, terminal. *Keel* densely crested-laciniate. *Capsule* glabrous, not emarginate.

S. Patagon., by Rio Chico; at Rio Coy, by Hatcher. A specimen in the Gray Herbarium is from the Galapagos Islands, and has a note in Gray's handwriting "sed foliis latioribus"; which note would also apply to the Hatcher specimens. "Differs from *P. Darwiniana* by having broader leaves and much smaller flowers, scarcely 5 mm. long." (Speg.) By Rio Deseado.

12. P. THESIOIDES Willd.

Undershrub. *Stems* numerous, erect. *Leaves* crowded, oblong-linear, *Racemes* 8–12-flowered. *Capsule* slightly 2-horned at the summit.

(Chilian Andes); Patagon. (?).

13. P. VARIABILIS H. B. & K.

Stem ascending, subfastigiately branching upwards. *Leaves* sparse, remote, narrowly linear, glabrous, with pellucid dots. *Spikes* lax. *Flowers* crested. *Seeds* conical, retrorsely pilose.

(By Rio Orinoco); Patagon.

2. BREDEMEYERA Willd. (including *Hualania* Phil., and *Comesperma* Labill.)

Perennial herbs, or undershrubs, sometimes climbing, with alternate, *exstipulate* leaves, and flowers in simple or branching *racemes*. The 2 inner *sepals* large, wing-like; the lateral *petals* wanting or scalelike; the 2 upper petals and the lowest one partly united to the staminal tube. *Capsule* long-cuneate. *Seeds* hairy.

Species 50; section *Eubredemeyera* (15 sp.) and *Hualania* (4) in S. Amer. The others (*Comesperma*) in Australia.

BREDEMEYERA MICROPHYLLA Hier.

(Only the fruit.) *Capsule* obovate-oblong; slightly emarginate, crowned by the persistent style, attenuate at the base; laterally compressed, 2-celled; the cells 1-seeded. *Seeds* 11 mm. long, suspended, appressed silky; with endosperm. *Embryo* thick, fleshy, green.

N. Patagon., by Rio Colorado & Rio Negro.

3. MONNINA Ruiz. & Pav.

Annuals or perennials, with spike-like racemes. *Sepals* free, or the anterior pair partly united; the wings small. Anterior *petal* sessile, free from the staminal tube; lateral *petals* short, adnate to the tube. *Carpels* 2, one of them mostly rudimentary. *Fruit* a key or a drupe. *Seeds* smooth.

Species 60, in Mexico and along the Andes.

1. M. ANGUSTIFOLIA DC.

Woody perennial. *Lowest* leaves soon vanishing. *Branches* and branchlets pubescent.

Patagon.

2. M. DICTYOCARPA Griseb.

Undershrub branching at base; 30 cm. high; the *branches* leafless above, ending in a short-flowered raceme. *Leaves* shortly lance-linear, mucronulate. *Wings* rounded. *Keel* 3-lobed. *Stamens* 8. *Fruit* 1-celled, glabrous, orbicular, winged, reticulate, the veins prominent towards the margin and forked.

(Chilian Andes; Argentina); N. Patagon.

Family 58. EUPHORBIACEÆ. Spurge Family.

Monœcious or diœcious plants with acrid, often milky, sap, and of varying habit. *Flowers* apetalous or petaliferous, sometimes much reduced, and often subtended by an involucre which resembles a calyx. *Ovary* usually 3-celled, with 1–2 pendulous ovules in each cell. *Styles* 3-cleft. *Fruit* tricoccous, the parts often breaking away elastically from the axis. *Endosperm* oily or fleshy; and cotyledons broad.

Species 400, abounding most in warm climates.

KEY TO THE GENERA.

1. Flowers distinct. Stamens 2–3, on short filaments. Styles 3, united at base. Cotyledons broader than the radicle. Calyx small, opening before anthesis; or none. 1. *Colliguaya*, p. 552.
2. Flowers grouped, one central female and several 1-staminate males, enclosed in a calyciform involucre, the whole resembling a hermaphrodite flower. The tricoccus fruit protruding, and glands alternating with the lobes of the involucre. 2. *Euphorbia*, p. 553.
3. Flowers solitary in the axils, or terminal and crowded. Stamens 6. Embryo linear, the cotyledons scarcely as wide as the radicle. Styles distinct. Heath-like. 3. *Dysopsis*, p. 554.
4. Axillary spikes, apically male, of 5-merous flowers. Ovary tridymous; styles bifid. 4. *Aonikena*, p. 555.

1. COLLIGUAYA Molin.

Shrubs, with terminal spikes of monœcious (or diœcious) *flowers*, the partial inflorescence being glomerulate or rarely lax, and without calycoid involucre. *Petals* none. *Male flowers* with no calyx or rudimentary calyx, and 2–3 *stamens*. *Female flowers* with 2–3 *sepals*. *Fruit* having 2–3 bivalved cocci, or a 3-winged carpophore.

Species 6, in extratrop. S. Amer. (Fig. in Eng. & Prantl, iii, 5, p. 100, C–F.)

1. C. INTEGERRIMA Gill & Hook.

Leaves coriaceous, entire. *Male bracts* broad, ovate, horizontal, containing 9–14 *stamens*. *Female* bracts ovate-lanceolate, enclosing the sessile, oblong-ovate, acuminate *sepals*. *Ovary* 2-celled; *capsule* didymous, compressed.

(Chilian Andes); Patagon., Chubut, Rio Sta. Cruz, Golfo de San Jorge.

2. C. PATAGONICA Speg.

Fruticose, glabrous, branches nearly leafless, flexuose and subcircinate at top. The few *leaves* caducous, linear, entire, obtuse, cuneate; others at the base with a large, tooth-like gland. *Spikes* axillary, short, bracts coarsely 2-glandular. *Capsule* didymous, 2-celled, mediocre. *Seeds* subglobose, fusco-maculate, with small, white caruncle. — Diœcious (Speg.)

Patagon., Chubut, by Lago Musters; by Rio Sta. Cruz and Rio Chico.

2. EUPHORBIA Linn.

Herbs or shrubs, with acrid, *milky juice*, and monœcious, pedicled *flowers*, in sets of several males and a single, exserted female, enclosed together in a calyciform involucre. *Perianth* none, or 3 rudiments on the female flower; *stamens* each on a jointed filament-pedicel, and each representing a flower. *Ovary* sessile on top of its pedicel, 3-celled, the cells 1-seeded; becoming a tricoccous *fruit*.

Species 600, chiefly subtropical, and often xerophil. Some are found in Lapland and Iceland; whence they extend to S. Amer., Australia, and the Fijis, and New Zealand.

1. E. PATAGONICA Hieron.

Glabrous, glaucous, having many stems from a short root. *Leaves* fleshy, subentire; the lower cauline sparse, sessile, semiamplexicaul, oblong, entire, 25 mm. by 7–8 mm. Upper floral *leaves* ovate, basi-cordate. *Inflorescence* frequently dichotomous from 3 approximate radii. *Involucre* long-peduncled (8–10 mm. long) dentate, subtruncate, with 4–5 glands. *Capsule* deeply 3-sulcate, scarcely calyculate. *Styles* briefly united at their base, thick and 2-lobed above.

N. Patagon.; common in dunes near Carmen de Patagones.

2. E. PORTULACOIDES (Linn.) Spreng.

Glabrous (or minutely velvety), with many stems from a long root, rays of the umbel 3, often long and leafy, and repeatedly dichotomous; the *leaves* glaucous, fleshy, sessile from an attenuate base, obovate, obsoletely crenulate, the floral leaves similar. *Inflorescences* in the dichotomies; *involucral lobes* long with purple glands. *Seeds* ovate, subtetragonal, smooth.

(Chili); Patagon., at Coy Inlet, by Hatcher, Nov. 5, 1896; "in bunches on the pampas." Chubut; in dry, sandy places. Allied to *E. ipecacuanha* L.

E. PORTULACOIDES CHILENSIS Gay.

Stems often erect. *Leaves* oblong-lanceolate or lanceolate, acute.

(Chilian Andes; Argentina); N. Patagon., by Rio Negro.

EUPHORBIA PORTULACOIDES GLABRA Phil.

"In terris magellanicis."

Spegazzini gives 3 forms: (*a*) *obtusifolia*, glabrous; leaves obtuse. (*b*) *acutifolia*, glabrous; leaves acute. (*c*) *bridgesi*, hispidulose; leaves obtuse.

3. E. PSEUDOPEPLUS Speg.

(*Tithymalus*, *galarrhœa*, *leiocarpa*, *subleiosperma*.)

Annual, the stem at the very base having 2 opposite, equi-long branches, above this densely and alternately branching; the *branches* and branchlets subappressed; *cauline leaves* alternate, spatulate, subpetiolate, small, caducous; *floral leaves* larger, opposite, suborbicular, sessile. *Umbels* 2–5-rayed; the rays 2–3-dichotomous. *Flowers* small, nearly sessile; lobes of the turbinate, membranaceous *involucre* minute, entire; *glands* ochroleucous, entire; *cocci* of the capsule dorsally rounded; *seed* elliptical, rugose-reticulate. *Caruncle* peltate, not depressed.

In higher places along the Rio Negro, and Golfo de San Jorge.

4. E. SERPENS Kth.

Glabrous annual. *Stems* filiform, prostrate, branching. *Leaves* short-petioled, from an unequally cordate base, ovate-orbiculate, entire, often retuse. *Stipules* broad-triangular, toothed at apex. *Involucres* solitary in the upper axils, but approximate, as the internodes are short, 2–3-lobed, with transverse oblong glands. *Styles* shortly bifid. *Cocci* keeled.

(N. Amer., by Mexico to S. Am.); N. Patagon. It seems identical with the Oriental *E. serpens indica* Engelm. (DC. Prodr., xv, 2, p. 30).

(Fig. in Brit. & Br, ii, p. 372.)

3. DYSOPSIS Baill.

Small, prostrate herb, with alternate, petiolate *leaves*, and small, axillary, monœcious *flowers* (or terminally crowded). *Calyx* 3-cleft. *Petals* none. *Stamens* 6, epicalycine, exsert, with versatile anthers. *Ovary* 3-celled; *styles* distinct, lanceolate, laciniate. *Capsule* tridymous, having small *seeds* with narrow cotyledons.

Only species:

D. GLECHOMOIDES (Rich.) Müll.

(*D. gayana* Baill.)

Leaves broad-ovate to orbicular, basi-truncate to cordate, crenate, or lobed. *Flowers* subsessile or long pediceled.

(Andes, Fernandez); Magellan, by mountains and woods; Fuegia.

DYSOPSIS GLECHOMOIDES HIRSUTA.

In Fernandez, and at Punta Arenas.

4. AONIKENA Speg. (*Nova Addenda ad Fl. Patagon.*, p. 162, 1902.)

Euphorbiacea, crotonea, chrozophorea, eleutheropetala.

Male flowers: calyx in the bud ovoid, acute, closed, in anthesis valvately 5-partite; *petals* 5, shorter than the calyx, denticulate; *disc* inconspicuous; *stamens* 5, filaments united at base into a column, alternating with the petals; anthers ovate, always erect, dorsifixed, the locules parallel, laterally dehiscing; no rudiment of an ovary. *Female flowers: calyx* as in males, the sepals scarcely larger; petals and disc-glands none; *ovary* 3-locular; *styles* spreading, free from the base, slightly bifid below the middle; the branches slender apically, obtuse, entire; *ovule* in the locules solitary. *Capsule* when dry tridymous, separating into 2-valved cocci. *Seeds* non-carunculate, testa subpapillose-porous; endosperm fleshy, greenish; embryo straight; radicle cylindrical; cotyledons plane, very short, and very broad. Tender, glabrous annual; *leaves* alternate, plane, entire, petiolate; *spikes* axillary, slender, floriferous above the middle, the *flowers* somewhat remote, sessile, the *lower* female, the *upper* male. *Capsules* glabrous, smooth.

Named from Aóniken, the savages of southern Patagonia, also called the *Tehuelches.*

A. PATAGONICA Speg.

Small, effuse, stems green or purple, obsoletely and obtusely subangulate, rather fleshy. *Leaves* orbicular to ovate, long-petiolate. *Spikes* twice as long as the subtending leaf, 5–7-flowered. *Flowers* small, the lower 3–4 female. *Sepals* acute, reflexed after dehiscence of the capsules, adorned with the columella persisting in the center. *Seeds* cinereous, subglobose.

S. Patagon., in sandy elevated places by Rio Chico, near Chonkenkaike.

Family 59. CALLITRICHACEÆ. Water-starwort Family.

Aquatic herbs, rarely terrestrial, with opposite, exstipulate, entire *leaves*, and minute, perfect or monœcious, axillary flowers. *Perianth* none. *Bracts* 2–none. *Stamen* 1. *Ovary* 4-celled, with 2 *styles*. *Seed* 1 in each cell, anatropus, with endosperm. *Fruit* 2–4-coccous.

Only 1 genus, 20 species, widely distributed (except in S. Africa).

CALLITRICHE Linn.

Characters of the Family.

1. C. DEFLEXA A. Br. (*C. pedunculata* A. Gray.)

Small annual, forming tufts on moist soil, without stellate scales. *Leaves* uniform, minute, obovate or obovate-lanceolate, crowded. *Bracts* none. *Pollen* subglobose, minute. *Fruit* minute, broader than long, dicoccous; mericarps subsinuate, convex dorsally, keels acute. *Stigmas* patent, persisting, and often reflexed. *Pedicels* long or short, reflexed, or spreading.

Amer., in warm and temperate parts. Swamps in Staaten I., and in Basket I.

2. C. OBTUSANGULA LeGall.

Upper leaves obovate, often rosulate, many-nerved; *lower* remoter and narrower. *Pollen* subglobose. *Fruit* handsome, rounded at the angles, sulci evanescent. *Stigmas* persistent, erect or spreading.

(Eur.); Staaten I. (var. *antarctica* Engelm.).

3. C. PALUSTRIS Linn. (*C. verna* L.)

Submerged *leaves* linear, the others obovate. *Fruit* sessile, oval, 2-bracted, flat on the face, longer than the styles.

(Eurasia and N. Amer., also in Kerguelen I.); Falklands; Fuegia.

4. C. VERNA Linn. (? being sterile here).

Varies much in foliage; upper and floating *leaves* usually oval and pediceled, 2-ribbed; *lower leaves* linear, 1-ribbed; rarely all linear. *Fruiting* pedicels short, with 2 falcate bracts at base; *fruit* tetragonal, lobes dorsally keeled or winged.

(Eur. and N. Amer.); Chubut, in swamps and pools near Lago Fontana.

Family 60. EMPETRACEÆ. Crowberry Family.

Low, evergreen, heath-like shrubs, with small, narrow, subsessile, crowded, shining, imbricated *leaves*, revolute at the margins; and *flowers* small, diœcious or polygamous, axillary or terminal. *Sepals* 3. *Petals* 2–3, or none. *Male flowers* with 2–4, usually 3, *stamens*. *Ovary* sessile, 2–several-celled, *style* cleft similarly. *Drupe* berry-like. *Seeds* with endosperm.

Species 5, in temperate and cold regions, and on mountains. (*Corema* is confined to S. United States.)

EMPETRUM Linn.

Flowers in the upper axils. *Petals* 3, purplish. *Drupe* black or red, with 6–9 nutlets.

Species 2, *E. nigrum* L. in Eurasia and N. Amer., with black, rarely white fruit, and the following:

E. RUBRUM Vahl. (*E. nigrum* L. var. *rubrum* DC.)

Drupe red. *Pubescence* on young leaves stronger than in *E. nigrum.*

(Tristan d'Acunha; Mts. of Chili); Falklands; S. Patagon., by Hatcher in the Cordilleras, in fruit Feb. 16, "quail and partridge feed on its berries." W. Patagon.; Magellan, Fuegia to Cape Horn. "Over the whole steppe region, and often in the rainy forest region and on the mountains." (Dusén.)

Family 61. CORIARIACEÆ.

Smooth shrubs, with angular branches, opposite or 3-whorled, *exstipulate leaves*, and small, 5-merous, hypogynous *flowers*, having distinct, small and fleshy *petals*. *Stamens* 10; *ovary* 5-lobed (sometimes 10-lobed), becoming indehiscent, *cocci* separated by the persisting *calyx-leaves*. *Styles* 5. Cocci 1-seeded, with very scanty *endosperm*.

Species about 8, scattered from the Mediterranean through Nepal, China to Japan; and New Zealand and neighboring islands; also in S. Amer. from Mexico to Patagonia.

CORIARIA L.

Only genus, fig. in Eng. & Prantl, iii, 5, p. 128. Also fossil species. *C. thymifolia* Humb. in New Zealand. Kermadec and Peru to Mexico; other allied forms in Peru and New Zealand, in alpine regions.

CORIARIA RUSCIFOLIA Feuill.

Sarmentose shrub, with flexible, pendent *branches*. *Leaves* sessile or nearly so, ovate-lanceolate, punctate-acute, 5–7 cm. long, opposite, sometimes in whorls of 3–4. *Flowers* racemed. Fleshy *petals* about the fruit are azure. Height 1–3 meters; a poisonous plant.

(New Zealand, Kermadec, and Chatham I.; Chili); Chubut, rare in shrubberies near Carren-leofú and Bolson. The fleshy petals yield a wine to the natives of New Zealand; whilst the fruit is poisonous.

Family 62. ANACARDIACEÆ. Sumach Family.

Trees or shrubs, with acrid sap, and mostly alternate, exstipulate, simple or compound *leaves*, without pellucid dots, the petioles often winged; and regular, sometimes diclinous *flowers*. *Calyx* 3–7-cleft. *Petals* 3–7, hypogynous, or none. *Stamens* as many as the petals, or differing, inserted on a hypogynous disk. *Ovary* in staminate flowers 1-celled; in the pistillate flowers 4–5-celled, *Styles* 1–3. *Ovules* 1 in each cell. *Fruit* a small drupe. *Endosperm* scanty or none.

Species 400, most in warm regions.

SCHINUS Linn.

Leaves simple or odd-pinnate. *Flowers* small, white, diœcious, in panicles. *Stamens* 10. *Female flower* with fine staminodes, 1-celled; *style* 3-branched or 1; ovule pendulous. *Drupe* globular, chartaceous.

Species 12, in warm parts of S. Amer.

1. S. CRENATUS (Phil.) Engl.

Branches short, cinereous. *Leaves* elliptic, varying, mostly acute both ways, crenate upwards, with prominent midrib and immersed lateral nerves. *Racemes* shorter than the leaves; *bracteoles* semiovate, marginally ciliate; pedicels slender. *Calyx-lobes* ovate; *petals* thrice as long, oblong. *Ovary* subglobose; *styles* distinct, with 3-lobed capitate *stigma*.

(Chilian cordilleras); Patagon., Chubut, in mountain woods.

2. S. DEPENDENS Orteg. (*Duvaua præcox* Gris.) Incense-bush.

Leaves simple. *Flowers* 4–5-merous; *styles* united. *Stamens* unequal. Many varieties with the leaves differing, from broad to narrow, or reduced to the sagittate petiole. (Fig. 104 in Eng. & Prantl, iii, 5, p. 163.)

(Chili, S. Brazil; Argent.); N. Patagon. A low bush with crooked branches and thorns; a purgative resin got from its trunk is used medicinally. *Incense-bush*, "Mata de Incienso."

S. Patagon., by Rio Sta. Cruz, with thick, entire leaves.

3. SCHINUS LATIFOLIUS Engl.

Leaves subcoriaceous or membranous, oval to oval-oblong, 3–7 cm. long by 15–30 mm. broad, obtuse or acute, serrate-dentate; *petioles* terete, slightly sulcate above, 5–9 mm. long. Inflorescences 1–2, axillary or sometimes extra-axillary. *Calyx* 4–5 mm. long. *Fruit violet.*

4. S. MONTANUS (Pb.) Engl.

Pubescent, with thick, subscariose *leaves*, the upper petioles very thick; blades truncately oval, obtuse, or apiculate, entire or wavy-margined, about 4 cm. long. *Inflorescence* shorter than the leaves.

S. Patagon., in shrubberies near Lago Argentino.

S. MONTANUS PATAGONICUS Phil.

Shrub 2 m. high. *Leaves* petiolate, with their *margins* obscurely crenate towards the apex.

(Cordilleras of Valdivia); N. Patagon.; by Lago Lajara.

(*S. molle*, found farther north, is the chief *Incense-bush*, and has a sugary edible drupe. Fragments of its leaf move by jerks when floating on water, being impelled by the exit of the volatile oil.)

Family 63. CELASTRACEÆ. Staff-tree Family.

Trees or shrubs, with simple *leaves*, *exstipulate* or having small, *caducous stipules*. *Flowers* small, perfect, 4–5-merous, with a disk supporting the *stamens* which are isomerous and alternate with the petals. *Ovary* superior or joined to the disk, 3–5-celled; *cells* 1–2-ovulate. *Style* short, thick. *Fruit* a capsule. *Seeds* enclosed in a showy arillus and with a large *embryo* in the axis of *endosperm*.

Species 350, in warm and temperate climates.

KEY TO THE GENERA.

1. Fruit dehiscing, 2- (rarely 3-) celled. Flowers 5-merous. Disk fleshy, convex, stamens inserted beneath it. Seeds arilled. Leaves alternate, evergreen. 1. *Maytenus*.

2. Fruit indehiscent, 3–4, rarely 2-celled. Flowers 4–5-merous. Disk flat, lobed, stamens inserted between the lobes. Seeds arilled or not. Leaves opposite or alternate or whorled. 2. *Rhacoma.*

("Distinguished from *Maytenus* by its capsules remaining closed, whilst those of *Maytenus* burst open.")

1. MAYTENUS Feuill. ex Juss. Gen.

Unarmed, evergreen shrubs, with alternate, petiolate, coriaceous, serrate *leaves*, and axillary, polygamous, 5-merous flowers, solitary or fascicled, or cymose. *Ovary* immersed in the orbicular disk; its cells 1- (rarely 2-) ovuled. *Seeds* with crustaceous testa.

Species 70, S. Amer., with 3 sp. in Mex., 1 in Galapagos, and 1 in St. Vincent I.

1. M. BOARIA Molina. (*M. chilensis* DC.)

Leaves elliptical-oblong, attenuate at base, apically acuminate, serrate. (Chili); N. Patagon.; valleys of Upper Limay and Chubut. "A small tree, rather variable in habit." (J. Ball.) Fuegia, at Lapataia, on the Beagle Channel.

M. BOARIA LATIFOLIA Reiss.

(Chili; Argentina); Patagonia.

2. M. MAGELLANICA (Lam.) Hook. f. (*Celastrus magellanicus* DC.)

Branches terete, pubescent. *Leaves* glabrous, elliptic-ovate, attenuate both ways, finely serrate. *Peduncles* short, 1-flowered; bracteoles fimbriate. *Calyx-segments* rounded. *Petals* ovate-oblong, obtuse. *Anthers* ovate-cordate. *Capsule* compressed, orbicular-obcordate, 2-celled, 2-valved, 2-seeded. *Arillus* white.

W. Patagon.; E. and W. Magellan. Dawson I.; Fuegia, Ushuaia, by Hatcher. Wood hard, used by the natives for arrows; called "lenadura" and aiâen.

2. RHACOMA Linn. (*Myginda* L.)

Shrubs varying as to leaves, etc. *Flowers* few, minute, usually 4- (or 5-) merous. *Calyx-tube* urceolate, its lobes rounded. *Petals* reflexed. *Stamens* inserted between the lobes of the disk; anthers globose. *Ovary* fused with the disk, 3–4-celled; cells 1-ovuled. Styles very short, lobed. *Fruit* small, dry, or drupaceous with pyrenes. *Seeds* arillate or not.

Species 14, in trop. Amer.; Central Amer.; Florida; West Indies; Chili (not Brazil).

RHACOMA (MYGINDA) DISTICHA Hook. f.

Branches distichous, divaricate. *Leaves* small (15 mm. long), very numerous, evergreen, glabrous, alternate, distichous, short-petioled, linear-oblong, entire, subacute, margin finely recurved, apiculate. *Flowers* axillary, solitary, short-peduncled. *Fruit* coriaceous, abortively 1-celled, 1-seeded, usually with an aril.

(Chili); Magellan; S. Fuegia, by Hatcher. It forms dense woods about Ushuaia. W. Patagon., forming undergrowth of woods of *Nothofagus betuloides* at 500 meters elevation (Dusén); Chubut, mountain shrubberies near Carren-leofú.

Family 64. RHAMNACEÆ. Buckthorn Family.

Erect or climbing shrubs or trees, often thorny, with simple, stipulate *leaves;* and small, perfect, 4–5 merous *flowers*, usually in cymes or paniculate; the *petals* inserted on the calyx, or none, and the *stamens* as many as, and opposite to, the *petals* or their place. *Anthers* short; disk fleshy; *ovary* sessile, 1–5-celled; *cells* 1-ovuled. *Fruit* a drupe, or capsule. *Endosperm* fleshy, rarely none.

Species nearly 600, in temperate and warm climates.

KEY TO THE GENERA.

A. Drupe 1-, rarely 2-celled. Leaves alternate, pinnately nerved. Flowers axillary, small, petals none. Leafy branches partly ending in spines. 1. *Condalia.*

A2. Drupe with several pyrenes. Thorny shrubs with opposite, decussating branches, leaves small or none. Calyx-tube produced above the disk.

- *b.* Pyrenes indehiscent. Leaves 3-nerved, without transverse ridges. Flowers on short peduncles, below the axillary spines. 2. *Trevoa.*
- *b2.* Drupes 3-coccous, cocci dehiscing elastically. Flowers on nodding pedicels, mostly axillary.
  - *c.* Leaves mostly persisting, rarely none; transverse, stipular ridges. 3. *Discaria.*
  - *c2.* Leaves mostly deciduous, very small or none, without transverse, stipular ridges. 4. *Colletia.*

1. CONDALIA Cav.

Glabrous shrubs, with *spinescent branches*, and alternate, subsessile, pinnately veined, entire, coriaceous *leaves;* and axillary, solitary or fasciculate *flowers*. *Petals* mostly wanting. *Ovary* immersed in the disk, free, 2–1-celled. *Fruit* a drupe, surrounded by the receptacular-cup, and partly adherent to it. Seed compressed, or globose, not furrowed.

Species 10, in warm parts of Amer.

CONDALIA MICROPHYLLA Cav. (*C. lineata* A. Gray.)

Branches and branchlets light gray. *Leaves* very small, on short spurs, spatulate to oblong, 4-10 mm. long, mucronate or cuspidate, marked by 3–4 nerves on each side underneath. Flowers shortly pediceled. *Calyx* whitish, 5-lobed. *Petals* none. *Drupe* oblong.

(Argentina, "piquillin.")

N. Patagon., in high places by Rio Negro (Wilkes Exp.).

Three kinds of this according to the color of the drupes, melano-, erythro-, xanthocarpa.

(*Phylica* Linn. not found in America, is often heath-like with entire revolute, tomentose leaves and superior flowers, having 3-celled ovary and tricoccous fruit. It has many species in S. Africa, Madagascar, Bourbon, etc. One, *P. arborea* Thou., is found in Amsterdam I., the only tree of that island, forming its woods; also in Tristan, 5,000 miles distant, and nowhere else. Neighboring islands of these are all treeless.)

2. TREVOA Miers.

Leafy, branching, spinescent shrubs, with opposite branches and 3-nerved *leaves*, and small, deciduous *stipules*. Flowers fascicled on 1-flowered *pedicels*, below the axillary spines, 4–5-merous. *Calyx* long-produced above the inconspicuous disk, hairy inside, and its tube persisting under the ovoid, 2–3-celled *drupe*.

Petals and *stamens* inserted in the mouth of the calyx.

Species 3, Bolivia and Chili.

T. PATAGONICA Speg.

Nearly leafless, densely spreading, with spinose branches, 1–3 meters high.

Leaves early deciduous, elliptical, entire, obtuse upward, briefly cuneate below with a short petiole. *Flowers* racemed, white, minutely appressed-pubescent, with a large, bilocular, globose *drupe*.

Patagon., in valleys by Golfo de San Jorge; in dry valleys along Rio Chubut. "Sometimes nearly leafless or with small, coriaceous leaves; sometimes with large, membranaceous leaves." (Speg.)

3. DISCARIA Hook.

Branching, mostly glabrous shrubs, rarely leafless, the *branches* decussating, often spinescent, transversely furrowed at the nodes. *Leaves* opposite, minute, coriaceous, mostly persisting. *Stipules* small, joined by lines. *Flowers* on axillary, nodding pedicels. *Calyx-tube* continued above the disk, bearing the 4–5 *petals* (or petals none), and the stamens. *Ovary* 3-celled, immersed in the disk. *Drupe* dry, 3-coccous, cocci at length dehiscing, imbedded in the base of the calyx.

Species 12, chiefly in extratropical and Andine S. Amer.; also 1 each in the Galapagos, Australia and N. Zealand; some cultivated.

KEY TO THE SPECIES.

A. Leafless. Branches jointed, ending in a spine.	*articulata.*
*A*2. Nearly leafless. Branches virgate, spinose.	*longispina.*
*A*3. Leaves serrate, sparse.	
b. Flowers 4-merous. Leaves 12 mm. long; spiny branches as of *Ulex*.	*discolor.*
*b*2. Flowers 5-merous. Leaves 20 mm. Spines coarse.	*serratifolium.*
*A*4. Leaves entire.	
b. Spinose. Leaves lance-linear to oblong, caducous.	*febrifuga.*
*b*2. Unarmed. Leaves subovate.	
c. Calyx 5-cleft. Low, procumbent.	*andina.*
*c*2. Flowers 4-merous.	*magellanica.*
*b*3. Leaves subspatulate. Flowers 4-merous.	*integrifolia.*
*A*5. Leaves crenulate-toothed, elliptic-oblong.	
b. Branches virgate, with long spines.	*cognata.*
*b*2. Branches erect, some spinescent.	*foliosa.*

1. D. ANDINA (Miers) Speg. (*Notophæna a.* of Miers.)

Low, procumbent, unarmed. Branchlets tortuose, nodose, very leafy. *Leaves* opposite, from long, scaly, axillary buds, ovate, obtuse at both ends, or basi-acute; entire, thick, sparsely pilose all over, pinnately nerved; the petiole short, channeled, puberous. *Stipules* broad, bifid, ciliate, partly connate. *Flowers* few, aggregate. *Peduncle* exceeding the petiole, 1-flowered, erect, pilose. *Calyx* 5-cleft, its lobes half as long as the stamens. *Ovary* glabrous.

(Chilian Andes); N. Patagon., by Lago Nahuel-huapi.

2. Discaria articulata (Phil. sub *Colletia*) Miers.

Leafless, glabrous; branchlets strict, having 3 internodes, articulated, ending in a spine. *Flowers* crowded, with 4 stamens. *Pedicels* as long as the white, glabrous calyx; calyx-teeth erect, broadly triangular. *Petals* lanceolate, equalling the calyx-teeth. Genitalia included.

"The lines joining the stipules prove it to be *Discaria*, not *Colletia*." (O. Ktze.)

(Chili); Patagon. in shrubberies near Carren-leofú.

3. D. cognata (Miers sub *Notophæna*).

Branches long, virgate, angled-striate, glabrous, with long, pungent *spines*, floriferous at their middle. Young branches floriferous, arising below and exceeding the spines. *Leaves* opposite, elliptic-oblong, crenate-serrate, narrowing upwards; green above, pale underneath. *Stipules* and transverse sheath manifest. *Flowers* 2–4, fasciculate on long peduncles, 2–4 times exceeding the petiole and calyx. *Calyx* 4-cleft, glabrous. *Stamens* 4, shorter. *Ovary* pilose, style long.

Chiloe I.; Patagon., by Lago Nahuel-huapi and Lago Argentino. "Scarcely receding from the type. Leaves more numerous and deficient in spinescent branches."

4. D. discolor (Hook. f. sub *Colletia*) B. & H.

A small, spiny, glabrescent shrub, with bright, green *bark*, of habit of European *Ulex*. *Branches* rigid, terete, sparsely leafy, with jointed spines. *Leaves* evergreen, elliptic-oblong or obovate, obtuse, obscurely serrate, attenuate to a short petiole, paler underneath, 12 mm. long. *Peduncles* axillary. *Calyx* 4-cleft. *Cocci* pilose, 1-seeded. *Testa* crustaceous, shining.

(Chili); Patagon., Magellan, Fuegia, Ushuaia, Navarino I. By Rio Aysen in W. Patagon. (Dusén.)

5. D. febrifuga Mart.

Leafy, becoming leafless; branches slender, green when young, often finely white punctate. *Spines* terete, subulate, 2-leaved. *Leaves* petioled, lance-linear to oblong, 1-nerved. *Stipules* acute, sheathing, the branch ciliolate when young. *Calyx* as long as the pedicel; *capsule* longer (6–8 mm.) shining, reticulate.

(Brazil); N. Patagon., by Rio Negro. Fig. G–J in Eng. & Prantl, iii, 5, p. 422. The bitter cortex of its root is used as a febrifuge, "Brazilian china."

6. DISCARIA FOLIOSA (Miers sub *Notophæna*) Speg.

Leafy shrub or small tree, the *branches* not spreading, some of them spinescent, the spines erect, striate, pale to fuscous-red. Young branches unarmed, erect, bearing leaves and flowers. *Stipules* opposite, reddish, broad-trigonal, concave or 2-toothed, united around the stem. *Leaves* opposite, elliptical to oblong, obtuse or mucronulate, crenulate-toothed, green above, glaucous beneath, pinnately nerved. *Flowers* 3-fascicled from each axil. *Peduncle* erect, at length curved. *Ovary* pilose. *Style* glabrous, long. The *spines* are jointed in the middle, and there floriferous. In the young branches the *stipules* form in each axil a hollow cup with 2 lobes.

(Chili); N. Patagon., by Rio Negro.

7. D. INTEGRIFOLIA Speg.

Leaves entire, subspatulate, emarginate, shortly cuneate-petiolate, glabrous. *Flowers* axillary, ternate; peduncles twice as long as the petioles. *Calyx* 4-partite, subglobose, rose-purplish.

S. Patagon., by Lago Argentino.

8. D. LONGISPINA (Hook.) Miers.

Glabrous shrubs, nearly leafless, with virgate-spinose branches; *spines* opposite, remote, very long, often arcuate, mostly naked, callous-pungent. Young branches from beneath the spines; with leaves and flowers in the axils. *Leaves* opposite, small, long-elliptical, acute, entire, rarely with toothed apex; shining green, fleshy. *Stipules* red, ovate, 2-toothed, ciliate, united, minute. *Flowers* often crowded in the axils. *Calyx* as long as peduncle, urceolate, with 4 erect segments. *Petals* 4, acute both ways. *Stamens* subequal to petals. *Ovary* glabrous, globose. *Style* short. *Fruit* with 3 cocci, separating.

Argentina to N. Patagon.

"The thick roots serve as fuel; and the flowers are sold in Buenos Aires." (J. Ball.)

9. Discaria magellanica (Miers sub *Notophæna*).

Unarmed, finely pubescent; with short internodes. Young *leaves* ovate-oblong, obtuse at both ends, entire, or obscurely dentate, 5–6 mm. long. *Flowers* 4-merous; the young 2 mm. long, on peduncles as long.

W. Magellan, on Cordilleras.

10. D. serratifolia (Vent.).

Armed with coarse *spines; leaves* few, about as long as the internodes (2 cm.), oblong to linear-oblong; apically emarginate and mucronulate; attenuate downwards, shortly serrate-toothed, the teeth glandular; blade thickish and nerveless. Intrapetiolar *stipules* confluent into a ring. *Flowers* 1–2, axillary, crowded, 5-merous, shorter than the peduncles.

(Chili, cultivated) Patagon., to the Antarctic region.

4. COLLETIA Comm.

Branches decussating, spinescent. *Calyx-tube* much produced above the disk; *petals* and *stamens* inserted in its throat. *Ovary* immersed in the disk, becoming a dry coriaceous tricoccous drupe; *drupelets* dehiscing. *Leafless* or with minute, opposite, *deciduous leaves*, and *stipules* not transversely joined. *Flowers* 4–6-merous, below the spines on nodding, 1-flowered peduncles.

Species 13, chiefly in extratropical S. Amer. (Fig. in Eng. & Prantl, iii, 5, 422, A. B.) *C. spinosa* Lam. of S. Brazil, has wood with purgative sap, from which an alcohol is prepared as a medicine for intermittent fevers.

1. C. doniana Gay. (*Ochetophila trinervis* Poepp.)

A tree with rather dense crown. Glabrous, branching, with long, leafy, horizontal branchlets. *Leaves* opposite, ovate-elliptical, erect, attenuate to the petiole, apically obtuse, or mucronate, entire, pale underneath, 3-nerved. *Stipules* small, lanceolate. *Flowers* solitary in the axils, or fascicled, on short peduncles. *Cocci* smooth, cleft by a median slit.

N. Patagon., by Rio Negro, and near Rio Colorado. "One of our examples had spines 1 cm. long in the axils of the decussate leaves; the others had none." (Nied. & Lor.) In mountain shrubberies by Lago Nahuel-huapi.

2. COLLETIA FEROX Gill. & Hook.

Spines strong, awl-shaped. Fascicles of *flowers* scattered. *Calyx* oblong-cylindrical. *Anthers* nearly sessile. Perennial.

(Chili); Patagon., in gravel beds by Rio Chubut.

C. FEROX PUBERULA Gay.

(Chili); Patagon., in gravel beds near Rio Chubut. "The Patagonian form is densely and fasciculately branching, strong, obscurely green, its branchlets minutely and laxly pulverulent hairy."

3. C. LINEATA A. Gray.

Glabrous. Branches divaricate, spinescent. *Leaves* spatulate, or obovate, mucronate, thick, coriaceous, veinless on upper surface, nervose underneath, with short petioles. *Calyx* with 5 whitish lobes. *Petals* apparently none. *Drupe* oblong.

N. Patagon., by Rio Negro.

4. C. SPINOSA Lam.

Smooth shrub, with striated branchlets and spines; *spines* long, simple, stout. *Leaves* oblong-ovate, smooth, entire or slightly dentate towards the apex. *Flowers* solitary or few, in an inflorescence. *Pedicels* 2 mm. long. *Calyx* cylindrical, 5-toothed. Filaments short or bent down.

(Chili.)

C. SPINOSA VALDIVIANA (Phil.).

Densely pubescent. Branching at angle of 40° (60° in the type). *Flowers* fasciculate; *stamens* sometimes 4.

(Valdivia); Chubut, by Carren-leofú.

Family 65. ELÆOCARPACEÆ.

Trees or shrubs, with alternate or decussate, simple, stipulate *leaves* and regular, inferior *flowers;* the *petals* mostly free and apically much cleft, not contorted. *Stamens* numerous, sometimes on an androphore, anthers 2-celled, mostly opening by pores. *Ovary* mostly 2–many-celled; each *cell* many-ovuled. *Style* 1, branching. *Fruit* capsular.

Species 120, chiefly tropical.

1. Petals valvate, lobed or incised. Fruit a leathery capsule. Trees.	*Crinodendron.*
2. Petals imbricate, lobed. Fruit a berry. Shrubs with opposite, serrate leaves.	*Aristotelia.*

1. CRINODENDRON Mol.

Trees, with serrate leaves, and solitary, axillary, 5-merous flowers. *Petals* 5, exceeding the calyx, 3-lobed, cucullate. Androgynophore large, hairy, 10-lobed. Ovary 3–5-celled. Capsule coriaceous, loculicidal.

C. PATAGUA Mol. (*Tricuspidaria dependens* R. & P.)

Evergreen, with alternate, oval-lanceolate, serrate *leaves*, 6 cm. long, and fleshy, rose-colored flowers on long peduncles. Capsule subrotund, silky-pilose.

Valdivia; Chiloe; Magellan. (Fig. in Eng. & Prantl, iii, 6, p. 4, C–E). Dye is obtained from its bark. Reiche states that in the Province of Patagua it has white flowers, but that southward they are pink.

2. ARISTOTELIA L'Her. (*Friesia* DC.)

Shrubs, mostly with subopposite *leaves* and *flowers* axillary or lateral, racemose, usually polygamous. *Sepals* 4–5; petals as many, induplicate-valvate, incised or rarely entire. *Stamens* many, along with the *petals* inserted around an elevated, glandular torus. *Berry* indehiscent.

Species 7, 1 in Chili and Patagon., 1 in Tasmania, 2 in Australia, 3 in New Zealand.

A. MAQUI L'Her.

Berries as large as peas, dark purple, ultimately black, acid and edible and yielding under preparation a medicinal wine.

(Chili); Patagon., Chubut; by Lago Nahuel-huapi; Carren-leofú.

Family 66. MALVACEÆ. Mallow Family.

Mostly herbs or shrubs, with alternate, palmately-nerved *leaves*, often having stellate hairs and deciduous *stipules*. *Flowers* regular, often large, mostly perfect. *Sepals* 5 (3–4) united, often bracteolate, the lobes valvate. *Petals* 5, convolute. *Stamens* numerous, hypogynous, monadelphous, forming a column around the pistil. *Anthers* reniform, 1-celled. *Ovary* several-celled; the styles united, separating upwards. *Fruit* capsular; *seeds* reniform. *Embryo* curved. *Endosperm* little or much.

Species 800, in tropics and warm regions.

Key to the Genera.

In all these the carpels are arranged in a circle, and the staminal column is antheriferous at the top.

A. Style branches as many as the carpels.
b. Carpels each many-seeded, at least 2-seeded.
c. Involucel none. 1. *Abutilon*, p. 569.
c2. Involucel 3-leaved. 2. *Sphæralcea*, p. 570.
b2. Carpels 1-seeded.
c. Seeds erect. Involucel of 1–3 distinct bracteoles or none.
d. Stigma linear, on inner side of the style-branches. Carpels not beaked. 3. *Malva*, p. 571.
d2. Stigmas capitate, terminating the style-branches, which are often thickened above. Carpels beaked. 4. *Malvastrum*, p. 572.
c2. Seeds pendulous, with dorsal raphe. Involucel none.
d. Style-branches slender or thickened upwards, stigmatic on inside. Carpels fewer than 5. 5. *Plagianthus*, p. 572.
d2. Style branches capitate, apically stigmatic.
e. Carpels not winged, 5–∞. 6. *Sida*, p. 572.
e2. Carpels with 2 lateral wings. 7. *Cristaria*, p. 575.
AA. Style-branches twice as many as the carpels. Involucel of 5–∞ bracteoles. Carpels spiny or tubercled on the surface, 1–3-rostrate. Hypophyl not glandular. 8. *Pavonia*, p. 577.

1. ABUTILON Gaertn.

Chiefly herbs or shrubs, with cordate *leaves* and axillary flowers. *Involucels* none. *Calyx* 5-cleft. *Staminal* column antheriferous at apex. *Ovary* of 5–many carpels, each with several reniform *ovules*, falling away at maturity.

Species 90, in warm countries, some cultivated for their beauty.

1. A. bicolor Phil.

Fruticose. *Leaves* small, fasciculate, white underneath, lamina scarcely exceeding the petiole, 3-parted, the midlobe 3-lobed, the lateral lobes entire or 2-lobed. *Peduncles* solitary in the axil, exceeding the leaves. *Calyx* tomentose-white, broad funnel-form with short, triangular teeth. *Corolla* broad-funnelform, its *petals* thrice as long as the calyx, violaceous at base, sulphurous above.

(Chilian Andes at 4,000 meters); Patagon., at Chonkenk-aike by Rio Chico, etc.; by Lago Argentino.

(These have subpinnately lobed leaves with short-petioles; fruit cupulate, scarcely accrescent. Speg.)

2. Abutilon vidalii (Ph. sub *Cristaria*) Speg. (Plate XXI, *A*.)

Low shrub; with ash-colored branches and *stellately tomentose* petioles and peduncles. *Leaves* cordate, oblong-ovate, obscurely 3-lobed, crenate, 12 by 9 mm. *Calyx* large; its lobes broad-triangular, 2–3-toothed on both sides. *Corolla* twice as long as the calyx. *Capsule* 5-celled, the carpels prolonged at the external angle to one appendage. *Seeds* 2–3 in each cell.

S. Patagon., by Rio Sta. Cruz (Hatcher); Chubut, in plain near Lago Musters. *Leaves* large, with rounded, deeply cut lobes. Teeth of *calyx-lobes* everted. Dense stellate pubescence over the leaves and the calyx. Corolla purplish-pink. No calyculus on Hatcher's specimens.

2. SPHÆRALCEA St. Hil.

Herbs or shrubs. *Bracteoles* 3, distinct or partly united. *Calyx* 5-parted more or less deeply. *Carpels* 5–many, each 2–3-ovuled, separating from the axis when ripe, not septate between the seeds. *Styles* as many as the carpels. *Seeds* reniform.

Species 30, America and S. Africa.

1. S. australis Speg.

Perennial shrub branching from the base, the *branches* slender, arcuate-ascending, flexuose, subsimple, becoming glabrate. *Leaves* remote, pinnatipartite, the segments lobed or toothed, obtuse, hoary on under surface, green and subglabrate above. *Flowers* in the upper axils, solitary or ternate, subsessile. *Calyx* 5-parted; *sepals* lanceolate, acute, appressed, silvery-hoary. *Corolla* large, glabrous, livid. *Ovary* tomentose; *carpels* generally 2-seeded, not aristate.

Patagon., in dry places by Rio Chubut, and between Rio Negro and Rio Colorado. The hairs all stellate. Root long (50–150 cm.), branches 15–75 cm. high.

2. S. bonariensis (Cav.) Griseb.

Stems 30 cm. long, ascending-suffrutescent; *flowers* crowded in the axils and approximate at the apex.

Argentina.

SPHÆRALCEA BONARIENSIS CISPLATINA O. Ktze.

Lower axillary inflorescence 5 cm. long; upper shorter, not exceeding the mature leaves.

N. Patagon., by Rio Colorado.

3. S. PATAGONICA (Niederl. sub *Malva*) Speg.

Erect undershrub, 30–50 cm. high; many-stemmed, the stems branching, flower-bearing upwards; *white-stellate* woolly. *Leaves* 3–9 cm. long, petioled, subtriangular or ovate or narrower, 3-lobed, the lobes crenate-dentate. *Peduncles* short, 3-flowered, or 1-flowered. Bracteoles setaceous. *Calyx-lobes* lanceolate, acuminate. *Corolla* much longer, lilac, glabrous. *Carpels* 5–25, apicle short, oblique, scrobiculate beyond the middle.

N. Patagon., by shore of Rio Negro; and in Choele-choel I. by Rio Chubut, and Golfo de San Jorge.

3. MALVA Linn. Mallow.

Herbs, with toothed or lobed *leaves* and showy *flowers*. *Involucel* usually of 3 bracts. *Staminal* column antheriferous at its top. *Carpels* numerous with linear styles and stigmas; the cells 1-ovuled, becoming in fruit a ring of indehiscent, beakless mericarps, which separate from the short axis. *Seed* ascending.

Species 30; most in the Mediterranean region; some naturalized in N. Amer.; several in Chili; 1 in Australia.

1. M. NICÆËNSIS All.

Stem herbaceous, prostrate. *Leaves* angulate, acute, cordate, 5-nerved. *Pedicels* 3–4, erect, four times shorter than the petioles, each 1-flowered. *Calyx* pilose, shorter than the corolla. *Flowers* purplish to white.

(Mediterr.); Magellan, doubtless introduced.

2. M. PARVIFLORA Linn.

Stem herbaceous, spreading. *Leaves* subrotund, obtusely angled, crenate, glabrous. *Flowers* axillary, glomerate, sessile. *Corolla* scarcely exceeding the calyx. *Carpels* rugose above, toothed on the margin.

(Mediterr.); N. Patagon., near Rawson (Dusén); Carmen de Patagones.

4. MALVASTRUM A. Gray.

Herbs, with the *bracteoles* small, 1–3 or none; and *staminal* column antheriferous up to the top. *Ovary* 5–many-carpellary, the cells 1-ovuled. *Style* branches distinct, filiform or clavate. *Mericarps* with beaked tips. *Seed* ascending, reniform.

Species 75, Amer. and S. Africa; 2 species tropically cosmopolitan.

M. SULPHUREUM (Gill) Griseb. (*Sida sulphurea* Torr. & Gr.)

Covered by *stellate hairs* and silvery scales. *Stems* branching, erect or fastigiate. *Leaves* suborbicular-cordate or reniform, obscurely lobed; *petioles* of upper leaves shorter than the limb; of lower, longer; stipules linear. *Flowers* solitary in the axils. *Bracteoles* subulate. *Corolla* 4 cm. in diam., yellow (greenish when dry), marked by 6 rows of stellate hairs, outside.

Patagon., by Rio Negro; by Golfo de San Jorge.

5. PLAGIANTHUS Forst.

Mostly shrubs, with small, whitish *flowers*, axillary or in terminal spikes or panicles. *Bracteoles* none or remote. *Ovary* 2–5-celled; *cells* 1-ovuled; as many style-branches, stigmatose inwards. Ripe *carpels* abortively solitary, or separating from the axis; often indehiscent. *Seed* pendulous.

Species 7, Australia, New Zealand, and the following in Chili.

P. PULCHELLUS (Bonpl.) A. Gray.

Glabrous; *leaves* rather long-petioled, cordate-ovate to lanceolate, coarsely crenate. *Flowers* diœcious, conglomerate in axillary racemes, small. *Calyx of males* broad-campanulate, *of females* subglobose.

(Province of Talcao, Chili, 35° S. Lat.) Patagonia? Also in Tasmania and S. E. Australia, "whence it originates."

6. SIDA Linn.

Mostly no bracteoles. *Staminal* column antheriferous at the top. *Carpels* 5–many, 1-ovuled. Style-branches stigmatic at the top. *Carpels* indehiscent or at length apically 2-valved. Seed pendulous.

Species 75, in warm climates.

Key to the Species.

A. Leaves broad-ovate to cordate, with pinnatifid segments.
  b. Fruit glabrous.
    c. Upper leaves stalked. Flowers blue. *ameghinoi.*
    c2. Upper leaves nearly sessile. Flowers rose-lilac, showy. *chubutensis.*
  b. Fruit laxly-hairy. Upper leaves nearly sessile. Petals long, cyaneous. *tehuelches.*
A2. Leaves serrate.
  b. Petals not large, glabrous. *hastata.*
  b2. Petals twice as long as the calyx, hairy below. *leprosa.*
A3. Leaves crenate.
  b. Subrotund-cordate, coarsely crenate. *macrodon.*
  b2. Reniform-cordate, white-stellate. Flowers yellow to coppery. *obliqua.*

1. SIDA AMEGHINOI Speg.

Perennial; stellate-hoary; creeping or erect. *Leaves* remote, broad-ovate to cordate, 3-partite; their segments pinnatifid, obtuse. *Petiole* as long as the blade in upper leaves; twice as long in lower. *Stipules* triangular to ovate. *Flowers* subsolitary in the upper axils. *Peduncles* jointed above the middle; not bracted. *Calyx* 5-cleft half-way; its lobes subacute. *Corolla* slighty longer, glabrous, blue. *Fruit* conoid-hemispherical, glabrous, 12-carpeled.

"Pretty. Near *Cristaria*, but with wingless carpels."

S. Patagon., dry rocky places near Chonkenk-aike, on Rio Chico; at Golfo de San Jorge.

2. S. CHUBUTENSIS Speg.

Arcuate-erect, pale green, perennial; all the hairs minute-stellate. *Leaves* remote, lax-hairy both sides; *limb* broad-ovate-cordate, or suborbicular, 3–5-partite, the segments oblanceolate, pinnatifid or trifid, lower petioles twice as long as the limb; uppermost very short.

Stipules lanceolate. *Flowers* erect, becoming cernuous, solitary in the upper axils. *Peduncle* jointed upwards, bractless, much shorter than its subtending leaf. *Calyx* hispid, 5-cleft, ebracteolate; lobes ovate, acute. *Corolla* glabrous, large, rose-lilac. *Fruits* hemispherical-conoid, glabrous, 16-carpellate.

Patagon., by Rio Chubut, and Golfo de San Jorge. 15–50 cm. high.

3. S. HASTATA S. Hil.

Prostrate, branching perennial; stems flattish upwards. Stellate and lax hairs intermingled. Leaves petiolate, oblong to broad-elliptical, or suborbicular, base broadly cuneate, 5-nerved, serrate. Flowers solitary in the axils, long-pediceled. Calyx large, plicate-pentagonal, cleft half-way. Petals slightly longer, obovate; glabrous. Carpels 10–13, apex elongating, at length dehiscing.

(Argentina); in meadows near Bahia de San Blas.

4. SIDA LEPROSA (Ort.) Schum.

Perennial, with woody base; many-stemmed, branching below, with scaly indumentum. Leaves petiolate, the lower suborbicular, basi-cordate or truncate, serrate upwards, pedately 5-nerved. Stipules narrow. Flowers solitary in the axils, pediceled, sometimes with an accessory branchlet. Calyx large-campanulate; lepidote to stellately tomentose, divided half-way into acute, triangular lobes; with 3 shorter bracteoles. Petals twice as long as calyx, obovate, ciliolate-margined half-way, pilose beneath. Ovary depressed, 6–7-lobed. Styles long, connate half-way. Carpels rostrate, scarcely dehiscing.

(Cuba, Argentina, a var. in N. Amer.); N. Patagon., at Carmen de Patagones.

5. S. MACRODON DC.

Hirsute. Leaves subrotund-cordate, coarsely crenate. Peduncles solitary, 1-flowered, exceeding the petioles. Carpels 10, not beaked.

(Brazil); N. Patagon., by Rio Negro.

6. S. OBLIQUA Nutt. (*S. sulfurea* A. Gray.)

White-stellate. Stems prostrate. Leaves reniform, cordate, short-petioled, lobed, crenate-dentate, silvery above. Peduncles solitary, axillary, shorter than the leaves. Involucre of 3 narrow bracteoles. Petals yellow, turning coppery.

N. Patagon., by Rio Negro.

7. S. TEHUELCHES Speg.

Perennial, green to silvery, all the hairs minutely stellate. Stems several from the root-crown, subsimple, fistulose, subrigid. Leaves remote, silvery green, broad ovate-subcordate or suborbicular, 3–5 parted; segments from the middle, ovate or lanceolate, pinnatipartite. Petioles of lower leaves puberulous, often one third longer; the uppermost short or none. Stipules linear. Flowers laxly racemose, often ternate on the end of the peduncle, pedicels short. Calyx green-silvery, 5-cleft, lobes ovate, obtusish, tribracteolate. Corolla twice as long, cyaneous, glabrous. Ovary 12–14-carpeled, rough. Fruit orbicular, laxly hairy.

Patagon., in meadows between San Julian and Rio Deseado and near Golfo de San Jorge. 15–25 cm. tall.

7. CRISTARIA Cav.

Upright or decumbent, mostly hairy herbs, with angular-lobed or partite *leaves*, and axillary, solitary or racemed *flowers*. *No involucel. Stigmas* terminal. *Mericarps* with 2 superior wings which at length cause them to spring open.

Species 25, Chili and Peru.

KEY TO THE SPECIES.

A. Leaves trisected; the segments cut. Flowers panicled, purplish.	*ecristata.*
A2. Lower leaves rounded, entire or 3-parted. Flowers racemed, blue.	*heterophylla.*
A3. Leaves rounded; lower 5-, upper 3-parted, and further cut.	*patagonica.*
A4. Leaves runcinate. Flowers solitary, violaceous.	*hastata.*
A5. Leaves palmatisect; the lobes 3-cleft. Umbels.	*kuntzii.*
A6. Leaves pinnatisect.	
b. Glabrous. Plant decumbent. Flowers large.	*intermedia.*
b2. Sparsely hairy. Erect annual. Flowers violet.	*linoides.*

1. C. ECRISTATA A. Gray.

Erect, branched. Cauline *leaves* trisected, the lobes 2-parted and further cut. *Pubescence* stellate. *Upper leaves* bract-like. *Flowers* loosely racemose-panicled, pale purple. *Carpels* 12–16. *Capsule* conical.

N. Patagon., by Rio Negro.

2. C. HASTATA Phil.

Subglabrous, green to glaucescent. *Stipules* ovate, glabrous or ciliate. *Petioles* thick, glabrous, half as long as the limb. *Leaves* subruncinate-dentate, stellately hairy underneath, glabrous or sparsely stellate-hairy above. *Peduncles* glabrous, articulate above the middle, ebracteolate, 1-flowered. *Calyx* 5-cleft, stellate-pilose on the margin and 3 nerves, green; lobes triangular, acute. *Corolla* large, glabrous, violaceous.

N. Patagon, Neuquen, at Confluencia, and at Lago Nahuel-huapi.

3. CRISTARIA HETEROPHYLLA (Cav.) Hook. & Arn.

Rough annual, covered by stellate hairs. *Stems* various, not much branched. *Lower leaves* orbicular-oval, entire or 3-lobed. *Median leaves* tripartite, with divergent and sinuose segments; stellate beneath and on margins; lamina 4 cm. long, petiole as long. *Stipules* short, triangular. *Racemes* long, the lowest flowers axillary. *Peduncles* exceeding the calyx. *Sepals* hirsute, pungent, 15 mm. long. *Petals* twice as long, blue. Fruit unknown.

N. Patagon., at confluence of RR. Limay and Neuquen.

4. C. INTERMEDIA Gay.

Rather glabrous. *Stem* terete, decumbent. *Leaves* glabrous, rarely ciliate, pinnatipartite, the lobes obtuse, incised or coarsely toothed. *Petioles* striate. *Flowers* large; *calyx* very hirsute.

(Chili); Patagon., Chubut by Teka-choique.

5. C. (?) KUNTZEI (O. Ktze.) Speg. (*C. patagonica* O. Ktze. non Phil.)

Nearly *stemless* perennial herb, 5 cm. high, white-tomentose, except the violet petals. *Leaves* long-petioled, palmatisect, 15 cm. long and broad, with trifid lobes, having ovate lobules. *Flowers* about 5, subumbellately crowded, with leafy bracts. *Calyx-segments* acuminate, 6 cm. long, shorter than the petals, tomentose. Fruit (?).

Patagon. (M. & T.). It has *no bracteoles*, and may belong to *Sida;* to be called *Sida patagonica* (O. Ktze.) Speg.

6. C. LINOIDES (Hieron. sub *Malvastrum*).

Annual herb, with terete *stem*, simple, erect, subglabrous, or with few stellate hairs. *Lower leaves* sparsely hairy, 3 cm. long; petiole 3 cm.; blade pinnatisect, the segments 3–4 pairs, linear, obtuse, subdentate. *Upper leaves* with fewer segments, glabrous; *uppermost* like linear bracts. *Stipules* subulate, small. *Flowers* in upper axils, pedunculate, solitary. *Calyx* 5-cleft, the segments obtuse. *Petals* ovate, violet. *Carpels* 10–12, 1-seeded.

N. Patagon., by Rio Negro.

7. Cristaria patagonica Phil.

Erect to 10 cm. high. Densely stellate-pubescent. *Lower leaves* 5-, *upper* 3-partite, orbicular in outline. *Lobes* 3–5-partite; their partitions trifid, ovate-acute. Lower *peduncles* paired, equalling the petioles; upper crowded, exceeding the petioles. *Calyx* hirsute; half as long as the petals. Upper leaves are less divided, with linear-oblong segments.

N. Patagon., to foot of the Valdivian Andes.

8. PAVONIA Linn.

Herbs or shrubs, with stellate tomentum, or stiff bristles, or smooth. *Leaves* often angular or lobed. *Flowers* solitary or cymose in the axils. *Bracteoles* 5–many, separate or united. *Staminal* tube truncate or 5-toothed. *Carpels* 10; but either the anti-sepalous or the antipetalous may be suppressed; when ripe falling away, indehiscent or partly dehiscing; with 1–3 dorsal spines.

Species 70, chiefly American.

P. hastata Cav.

Leaves lanceolate, hastate, dentate. *Pedicels* 1-flowered. Bracteoles 5. *Carpels* unarmed. *Flowers* red, very venous.

(Brazil); N. Patagon., by Rio Negro.

Family 67. Eucryphiaceæ.

Flowers heterochlamydeous, choripetalous, hermaphrodite, 4-merous, with numerous *stamens* on a hypogynous *disk*, and 5–18 *carpels*, connate except the styles, and separating at maturity from the *axis* on which they hang suspended until dehiscing. *Sepals* 4, united at top, and coming away like a cap. *Petals* 4, convolute in the bud, white. *Seeds* several, 2-ranked in the carpels, pendent; winged; with endosperm.

Evergreen *trees*, with opposite, entire or toothed or pinnate *leaves*, and connate *stipules*.

Species 5 in S. temperate regions, Chili, New South Wales, Tasmania.

EUCRYPHIA Cav.

The only genus. (*E. cordifolia* Cav., a Chilian species, fig. 68, in Eng. and Prantl, iii, 6, p. 130.)

EUERYPHIA PATAGONICA Speg.

A tree, 10 m. high, with fastigiate branches, and densely hispid-villous branchlets. *Leaves* simple, decussate, short-petiolate, long-lanceolate, basally rounded, scarcely cordate, attenuate upwards, acute, irregularly serrate, the teeth acute-cuspidate-mucronate; subcoriaceous, glabrous on the upper surface, cinerascent on the lower, with villous nerves. *Flowers* solitary, long-peduncled; *sepals* pubescent, *stamens* numerous, glabrous.

N. Patagon., in woods near Lago Nahuel-huapi.

Family 68. HYPERICACEÆ. St. John's-wort Family.

Herbs or shrubs, with opposite or rarely whorled, simple, exstipulate *leaves*, pellucid-punctate or black-dotted. *Flowers* regular, perfect, 5–4-merous, hypogynous, with many *stamens*, often in sets of 3 or 5; and with 1–7-, mostly 3-celled *ovary*, with as many *styles*, and numerous *seeds*, without endosperm.

Species 280, chiefly in warm and temperate climates. (In Eng. and Prantl, iii, 6, p. 205, they are made a subfamily of Guttiferæ.)

HYPERICUM Linn.

Flowers chiefly cymose, yellow, 5-merous. *Ovary* 1-celled, with 3–5 parietal placentæ.

Species 210, widely distributed.

H. CONNATUM Lam.

Stems suffruticose, terete. *Leaves* deltoid, perfoliate, obtuse, punctate underneath, venous-reticulated, inflated at the margin. *Sepals* lanceolate, acute. *Stigmas* capitate.

(Argentina; Montevideo); N. Patagon.

Family 69. FRANKENIACEÆ.

Herbs or undershrubs, with stems jointed at the nodes, and decussate leaves, often involute and heath-like. Flowers in terminal or axial leafy dichotomies, pinkish; regular, hypogynous, heterochlamydeous. Calyx-leaves united, 4–7-lobed. Petals 4–7, not united, often having a lamellar appendage to the claws. Stamens mostly in 2 series of 3 each; anthers versatile. Ovary 1-celled; 2–4 parietal or basal *placentæ*. Style branched. Seeds numerous, with endosperm.

Species 34, on dry or saline wastes of warm climates.

KEY TO THE GENERA.

1. Hermaphrodite. Anthers versatile extrorse, didymous. Petals broad with a ligular appendage inside. Placentæ all ovuliferous. Leaves fleshy. 1. *Frankenia.*
2. Polygamo-monœcious. Anthers introrse. Petals spatulate, with no ligula. Placentæ 3, only 1 ovuliferous. Leaves ericoid. 2. *Niederleinia.*

1. FRANKENIA Linn.

Flowers hermaphrodite and 5-merous. *Petals* with an extra tongue-formed lamina. *Stamens* usually in two series of 3, the outer smaller; *anthers* versatile-extrorse. *Fruit* trigonal, ovate-pyramidal, long, all its 3 *placentæ* with seeds.

Subgenus *Afra* is in Africa, Spain and Canaries; subgenus *Oceania* in Australasia and S. W. America, and northward to California.

1. F. CHUBUTENSIS Speg.

Glabrous perennial, prostrate, from a woody *caudex*. *Old branches* naked, thickish, subtetragonal, decussately nodulose. *Innovations* subherbaceous, tetragonal ochraceous-green; internodes long, branching dichotomously or unilaterally. Branchlets densely leafy; *leaves* decussate, connately sheathing, small, elliptic-ovate, obtusish, rather fleshy, punctate, revolute. *Flowers* at the forks or bases of branches, sessile and solitary. *Calyx* pentagonal-subtubular, 5-toothed; *petals* white, spatulate, twice as long. *Stamens* 6, exsert. *Style* long, trifid. *Stigmas* clavulate. *Capsule* ovate, 3-valved, about 9-seeded.

S. Patagon., at Kuan-aike near Rio Chico.

2. F. PATAGONICA Speg.

A prostrate shrub, with nude, ascending branches, and decussate, distant branchlets. *Leaves* on the branchlets quadrifariously imbricate, very minute, fleshy, obovate, glabrous. *Flowers* subspicate-capitulate, rather large. *Petals* white, long-exsert.

Patagon., rare near the sea in gravel by Golfo de San Jorge. (Genus *Frankenia* is chiefly Australian; but it is represented in all the Continents. *F. cymbifolia* Hook., a Patagonian plant, is a misnomer. Its proper name is *Wilsonia humilis* R. Br., of the *Convolvulaceæ.* Index Kewensis, ii, 881. Eng. & Prantl, iv, 3*a*, 15.)

2. NIEDERLEINIA Hier.

Undershrub, with thick-skinned, ericoid leaves, and polygamo-monœcious *flowers.* *Petals* spatulate-cuneate, without an appendage, shorter than the calyx-lobes. *Stamens* in 2 series of 3, or staminodes, *anthers* introrse. Rudimentary *ovary* in the barren flowers. Only 1 seed-bearing placenta.

Only species.

N. MICROPHYLLA Cav. (*N. juniperoides* Hier.)

Low, branching shrub, the branches ascending, and with small, decussate, subprismatic, exstipulate, connate, dorsally channeled *leaves.* *Flowers* solitary, sessile in the dichotomies. *Calyx* 5-lobed. *Petals* 5, hypogynous, lutescent. *Stamens* 6, hypogynous, 1-celled or barren. *Ovary* free, 1-celled, placenta parietal. *Style* filiform, 3-cleft. *Seeds* 4–6, ascending.

Fig. of fruit and seed in Eng. & Prantl, iii, 6, p. 287, M, N. Over all Patagon., by salt lakes north of Rio Colorado; and N. and E. Fuegia (Dusén). Making large clumps by R. de Sta. Cruz.

Family 70. VIOLACEÆ. Violet Family.

Usually herbs, with alternate or basal, stipulate, simple *leaves*, and zygomorphous, 5-merous flowers. The lowest *petal* mostly spurred. *Stamens* 5, hypogynous, with adnate, introrse anthers, conniving over the ovary; the 2 anterior anthers with appendages. *Ovary* 1-celled, with 3 parietal *placentæ.* *Style* simple, club-shaped. *Seeds* many, with large endosperm.

Species 300, widely distributed.

VIOLA Linn.

Sepals subequal, produced somewhat posteriorly. *Anterior petal* with a long spur, for receiving the appendages of the 2 anterior *anthers.* *Capsule* elastically dehiscing into 3 valves.

Many species have also *cleistogamic flowers*, on runners, without petals.

Species 150, widespread; though common in New Zealand they are rare in Australia.

Key to the Species.

- *A.* Having stems.
  - *b.* Flowers yellow.
    - *c.* Leaves oblong-obtuse. Stipules incised. Spur short. *fimbriata.*
    - *c2.* Leaves ovate, attenuate-petiolate. Stipules ovate, fimbriate, subacute. Spur short. *maculata.*
    - *c3.* Leaves round-spatulate, entire, glabrous. Stem woody, attenuate-petiolate. Flowers minute. *sempervivum.*
  - *b2.* Flowers blue. Plants prostrate, branching, glabrous. Leaves cuneate-obovate, tridentate, toothed. No spur. *tridentata.*
  - *b3.* Petals variously colored in the flower. Stipules large, pinnatifid. *tricolor.*
- *A2.* Stemless.
  - *b.* Leaves glabrous.
    - *c.* Leaves small, oval, acute. Scape long; flowers yellow. *microphylla.*
    - *c2.* Leaves cordate-rounded, subacute. Stipules large. Flowers blue, with long spur. *huidobrii.*
  - *b2.* Leaves slightly hairy.
    - *c.* Leaves reniform-rotundate. Stipules lanceolate, subentire. Scape long, 1-flowered. Spur short. *magellanica.*
    - *c2.* Leaves ovate-rotundate. Stipules entire. Scape long, with long, narrow, auricled bracts near the flower. *commersonii.*
  - *b3.* Leaves woolly-margined, ovate-spatulate. Scape short. *vulcanica.*

1. VIOLA COMMERSONII DC.

Low. *Leaves* radical, petiolate, ovate-rotundate, obtuse, crenate, sparsely ciliate above, generally reticulated underneath. *Stipules* broad-ovate, membranaceous, concave, entire. *Scape* twice as long as the leaves, arcuate upwards; *bracts* near the flowers, rather large, erect, lanceolate, acute, auricled on both sides at the base. *Flower* pendulous; *petals* obovate-spatulate, glabrous.

Magellan, S. Fuegia to Cape Horn; by Orange Bay on the tops of the mountains; Cordilleras of S. Patagon. (by J. B. Hatcher, February 25, 1897).

2. V. FIMBRIATA Steud.

Root fibrous. *Stem* slender, fruticulose. *Leaves* petiolate, oblong, obtuse, hispidulous above, with fimbriate margin, crenate, the fimbriæ at length vanishing; *petioles* equalling the laminæ. *Stipules* sheathing, shortly incised. *Flowers* axillary, croceous. *Spur* very short, obtuse. *Capsule* ovate, glabrous, generally punctate. *Seeds* white.

Patagon.; Magellan, at Punta Arenas by Hatcher; N. and E. Fuegia, in sandy places, Dusén. Killik-aike (B. Brown).

3. VIOLA HUIDOBRII Gay.

Stemless, 8–10 cm. high, glabrous. *Leaves* cordate-rounded, more or less acute, crenate. *Stipules* large, linear-lanceolate, acute, ciliate-lacerate. *Peduncles* longer than the leaves. *Flowers* blue, spur rather long. *Stigma* apically thick, with very short rostrum. (Near *V. maculata*).

(Chili); Patagon. ("Leaves long-petioled" Reiche.)

4. V. MACULATA Cav. (*V. pyrolæfolia* Poir).

Stem herbaceous. Leaves ovate, subacute, abruptly attenuate to a petiole, sparingly spotted below. *Stipules* ovate, apically fimbriate. *Peduncle* pubescent. *Sepals* lanceolate-acuminate; *petals* yellow; spur short, obtuse. Lateral petals glandular-bearded; the upper one generally glabrous. *Stamens* apically emarginate. Margin of anthers ciliate. *Stigma* apically plane, its rostrum very short. *Capsule* oblong, trigonal.

Distinguished from *V. commersonii* chiefly by the long, acute, dentate stipules. (Speg.)

Magellan, S. Patagon. (Hatcher); Churucca in Desolation I., N. and E. Fuegia (Dusén); Ushuaia; Falklands; Navarino I.

V. MACULATA MEGAPHYLLA.

Leaves elliptical or subrotund-ovate. *Root* long terete.

V. MACULATA PUBESCENS Reich.

S. and W. Patagon. (by Dusén).

5. V. MAGELLANICA Forst.

Leaves radical, long-petiolate, reniform-rotundate, crenate, subpilose above. *Stipules* lanceolate, entire or apically lacerose. *Scape* glabrous, solitary, 1-flowered, twice as long as the leaves. *Bracts* lanceolate. *Sepals* oblong-lanceolate, obtuse. *Petals* obovate; the lateral ones bearded; the inferior produced into a short, blunt sac. *Style* arcuate. Stigma naked.

Staaten I.; Falklands; S. Fuegia; S. Patagon.; Punta Arenas; Cabo Negro, and Rio Coy (Hatcher).

6. VIOLA MICROPHYLLA Poir. (non Hook. f.).

Stemless. *Leaves* small, oval, acute, glabrous, save marginal cilia. *Scape* filiform, exceeding the leaves. *Peduncle* glabrous. *Flowers* yellow.

"This is a good species; all glabrous, save some cilia on the leaf-margins; its peduncles free from the rough hairs found in *V. maculata.* The *V. microphylla* of Hook. f. is a quite different plant."

Everywhere in Patagon.; Boucault Bay in Magellan Strait; Fuegia, San Sebastian.

7. V. SEMPERVIVUM Gay.

Stem woody, thickish, ascending. *Leaves* round-spatulate, entire, mucronate, smooth on both surfaces, margin cartilaginous-white or yellow; base attenuate-petiolate; densely cespitose on apex of branches. *Flowers* minute, yellow; peduncles shorter than the leaves. Stigmas 2-lobulate.

(Chili, to 3,000 m. altitude); Patagon., on rocks around Lago Nahuelhuapi.

8. V. TRICOLOR Linn. Pansy.

Annual, with stout, angled and branched stem; and crenate-dentate leaves, having large, lyrate-pinnatifid *stipules.* *Flowers* 16–25 mm. broad, the petals variously colored.

(Eur., cultivated and naturalized in N. Amer.); S. Patagon., on an island in Rio de Sta. Cruz (doubtless introduced).

9. V. TRIDENTATA Menz.

Glabrous; small, prostrate, branching. *Leaves* crowded at ends of the branches, coriaceous, cuneate-obovate, tridentate or trifid above, and 1-toothed on each side at base. *Petiole* short, dilating into sheathing stipules. *Scape* solitary, short, stout, with oblong, obtuse bracts. *Flowers* nodding. *Petals* blue, oblong, obtuse, glabrous, with *no spur.* *Capsule* globose.

Falklands; Staaten I.; Fuegia; W. Magellan at Puerto Angusto (Dusén); Orange Bay, near Cape Horn.

10. V. VULCANICA Gill. & Hook.

Nearly *stemless.* *Leaves* nearly cespitose, ovate-spatulate, woolly margined, serrate, attenuate to a plane *petiole,* smooth above, reticulately rugose underneath, or with linear yellow-glandular capsules underneath. *Peduncles* shorter than the leaf. *Stigma* oblique, rostriform, membranaceous behind.

(Chili); N. Patagon., rocky hills about Lago Nahuel-huapi.

Family 71. FLACOURTIACEÆ.

Evergreen trees or shrubs, with *leaves* mostly 2-ranked, alternate, pinnately veined, coriaceous. *Stipules* few, deciduous. Regular, perfect or unisexual *flowers*, 4–5 merous, with *petals* distinct or absent. *Stamens* numerous on a disk; anthers often appendaged opening by lateral slits. *Ovary* mostly free, 1-celled with 3–5 parietal *placentæ*, and many seeds. *Styles* or style-lobes as many as the placentæ. *Fruit* a berry, or capsule, or a drupe. *Seeds* with endosperm.

Species 500, tropical.

AZARA Ruiz. & Pav.

Leaves entire or dentate, bitter. *Flowers* in fascicles or corymbs, regular; *sepals* 4 (5–6); *petals* none. *Style* 3–4-lobed. *Berry* subglobose.

(Fig. in Eng. & Prantl, iii, 6*a*, p. 40, B, C, D.)

Species 22, chiefly Andine; 1 in Fernandez and 1 in Mexico.

A. LANCEOLATA Hook. f.

Stem and branches slender, brown-hairy. *Leaves* small, lanceolate, some ovate, remotely serrate, short-petioled. *Sepals* ovate, reflexed.

W. Patagon., Valdivia; Cape Tres Montes.

Family 72. PASSIFLORACEÆ. Passion-flower Family.

Woody tendril-climbers or erect herbs, with petioled, often palmately lobed *leaves*, and regular, perfect, 4–5-merous *flowers*. Throat of the calyx-tube bearing the *petals*, *stamens*, and double or triple fringe-like *crown*. *Ovary* free, 1-celled, with 3–5 parietal *placentæ*. *Styles* 1–5. *Fruit* a capsule or berry, usually many-seeded.

Species 325, in warm climates, most in S. Amer.

PASSIFLORA Linn.

Flowers large, on jointed peduncles. *Ovary* stalked, the filaments united around it, separate above; *anthers* versatile. *Fruit* a berry.

Species 250, chiefly in S. Amer., some in Asia and Austral., 1 in Madagascar.

P. CŒRULEA Linn.

Leaves glabrous, 5-partite, their lobes oblong, entire. *Petioles* 4-glandular at the apex. Stipules falcate. *Bracts* ovate, entire. *Crown* shorter than the calyx.

(Brazil; Peru); N. Patagon., near Carmen de Patagones (escaped?).

Family 73. LOASACEÆ.

Erect or climbing herbs or shrubs, often having stinging *hairs*, with exstipulate *leaves*, and perfect, regular, 4–5-merous *flowers*, having *calyx-tube* adnate to the ovary. *Petals* separate (sometimes 10), inserted on the calyx-throat. *Stamens* mostly numerous, inserted with the petals, often in clusters. *Ovary* 1(2–3)-celled, with 2–3 parietal *placentæ*. *Capsule* crowned by the persisting calyx-limb. *Seeds* mostly numerous; with scanty endosperm.

Species 200, American, with a solitary exception.

KEY TO THE GENERA.

A. Staminodes none, or the outer stamens as filaments or petaloid. Petals mostly flat. Seeds 1–2-seriate on the 3, rarely 5, parietal placentæ. Leaves usually alternate. 1. *Mentzelia*, p. 586.

A2. Fertile and sterile stamens intermingled, the fertile antipetalous, the barren as nectary-scales, antisepalous. Petals cucullate.

- *b.* Capsule opening apically, 3(–5)-lobed, mostly clavate or obconic, rarely twisted. Leaves opposite and alternate. 2. *Loasa*, p. 586.
- *b2.* Capsule opening apically by 3-lobes, cylindrical. Leaves 2–3-pinnatisect. Flowers sessile. (*Grammatocarpus*.) 3. *Scyphanthus*, p. 589.
- *b3.* Capsule opening below, not apically, turbinate, often spirally twisted. Leaves opposite, decussate, with stinging hairs.
  - *c.* Stem terete. Flowers usually cymose. Placentæ broad or 3-parted. Capsule thin-walled. 4. *Cajophora*, p. 589.
  - *c2.* Stem quadrangular. Flowers solitary on axillary peduncles. Placentæ first fleshy, afterwards dry and enlarged for disseminating the seed. 5. *Blumenbachia*, p. 590.

1. MENTZELIA Linn.

Petals 5, plane, with no intermediate scales. *Stamens* 10–200. *Ovary* 1-celled, *style* filiform, mostly 4-cleft, its lobes twisted. *Leaves* alternate, with hooked, but not stinging *hairs.*

Species 46, chiefly in warm parts of S. Amer.; 1 in Florida.

M. ALBESCENS Gris. (Gill. & Arn. sub *Bartonia.*)

Flowers large, showy, in a leafy panicle. *Staminodes* 5, petaloid, the outer filaments becoming gradually broader, and the outermost sterile. *Stem* with a white, shining epidermis. *Leaves* sinuately toothed. Capsule naked, 3-valved. Seeds broadly margined.

(S. United States; Mexico; Andes and through temp. S. Amer.); N. Patagon.

2. LOASA Juss.

Petals 5 (or 6–7), cucullate or cymbiform, mostly spreading, with as many alternating scales, which bear 2–3 dorsal setæ and are often appendaged. *Staminodes* 10, filiform, in pairs opposite the scales. *Ovary* 1-celled; *style* subulate; *stigma* acute or 3-cleft. *Capsule* 3-valved.

Herbs, often with stinging hairs, and yellow flowers.

KEY TO THE SPECIES.

A. Erect.
  b. Leaves pinnatifid, long-petiolate; segments entire or parted, suboval. Flowers solitary, apical. *patagonica.*
  b2. Basal leaves bipinnatifid, long-petiolate, ultimate segments roundish; upper leaves once-pinnatifid. Peduncles axillary, 1-flowered.
    c. Hairs not stinging. *argentina.*
    c2. Hairs stinging. *filicifolia.*
  b3. Leaves tripinnatipartite. Ultimate segments narrow. Flowers axillary. *multifida.*
  b4. Leaves basi-cordate, divided.
    c. Flowers few, subapical. Leaves 3-partite, and the segments 3-lobed. *spegazzinii.*
    c2. Flowers axillary. Leaves many-lobed. Petals with red base. *tricolor.*
A2. Twining. Leaves bipinnatifid; ultimate segments narrow. Flowers on terminal and axillary peduncles. *volubilis.*
A4. Decumbent-prostrate. Peduncles axillary, 1-flowered.
  b. Leaves petiolate, subrotund, 3–5-partite. *muralis.*
  b2. Leaves sessile, cordate-ovate, angular. *prostrata.*

1. L. ARGENTINA Urb. & Gilg. (*L. pinnatifida* Gill. var *gracilis.*)

Nearly erect. Annual herb, with long, twining stem. *Leaves* opposite, long-petioled; the basal leaves pinnate; their segments pinnatifid, with roundish, approximate lobes. Upper leaves few, pinnatifid. *Peduncles* axillary, usually 1-flowered. *Calyx-lobes* ovate, much shorter than the petals; half as long as the fruit. *Hairs* rigid, not stinging; some obsoletely glochidiate.

(Chili at 2,700 m. elevation); S. Patagon., by Rio Scheuen.

2. LOASA FILICIFOLIA Pœpp. (*L. pinnatifida* Gill.)

Nearly erect. *Leaves* opposite, long-petioled; the basal with pinnatifid segments and rounded subsegments; the upper pinnatifid.

Characters much as in *L. argentea*, but with stinging *hairs.*

"Chilian Nettle." In Chili at high elevations Head of Rio Chico de la Sta. Cruz, by Hatcher; in flower and fruit, Feb. 9, 1897.

3. L. MULTIFIDA Gay.

Erect. Stem rigid, stout, branching. *Leaves* opposite, deeply tripinnipartite; ultimate segments linear, acute; the lowest leaves long-petioled, the upper sessile: the floral leaves alternate. *Calyx-tube* very short, the segments linear-lanceolate, equalling the petals. *Scales* 2-lobed, dorsally 3-appendaged at base, with two 3-jointed filaments inside.

"Amor seco"; Chili; and near Cape San Antonio in N. Patagon.

4. L. MURALIS Gris.

Decumbent, branching, and rough all over, with stinging *hairs. Leaves* opposite, petiolate, subrotund in outline, 3–5-partite; their segments pinnatifid-lobate. Outer lobes and teeth ovate, acutish. *Peduncles* axillary, 1-flowered, cernuous, exceeding the leaf. *Calyx-tube* campanulate, the lobes much shorter, lanceolate, tooth-like, 4 times shorter than the short *petals*, which are hooded, dorsally setose. *Scales* hooded, truncate, dorsally naked, ending in a gland and enclosing 2 *staminodes.* Petals enclosing 10-staminal *fascicles. Style* simple. *Capsule* globose. *Seeds* oblong.

(Argentina.) N. Patagon., a var.

5. L. PATAGONICA Urb. & Gilg. (*L. pinnatifida* Speg., non Gill.)

Floriferous *stems* numerous, erect, patent, to 12 cm. high, sparsely leaved. *Leaves* lanceolate, or oval-lanceolate, pinnatifid, the pinnæ moderately remote, sessile, entire or 2–4-partite, oval to oval-orbicular.

Flowers solitary, apical; *petals* in the lower part broad-unguiculate. *Scales* dorsally ecarinate, anteriorly deeply excised; the lobes resulting thick-edged, making smaller lobes. *Ovary* inferior.

S. Patagon., by Lago Argentino, at Karr-aike, etc.

6. LOASA PROSTRATA Gill.

Covered by long, stinging hairs. *Stem* prostrate, flexuose. *Leaves* opposite, sessile, cordate-ovate, deeply angular. *Peduncles* axillary, 1-flowered, twice as long as the leaves. *Calyx-lobes* lanceolate, as long as the petals, longer than the fruit. *Capsule* with long, rigid hairs. *Seeds* ovoid, large, smooth.

Chili and N. Patagon. "I am somewhat doubtful as to this being in N. Patagon. The species of *Loasa* are variable, with their limits ill-defined." (J. Ball.)

7. L. SPEGAZZINII. (*L. patagonica* Speg., non U. & G.)

Annual? *Stem* short, thick, attenuate both ways, subsimple, with lax epidermis, leafy below, naked upwards. *Leaves* with long or short petioles, subcordate-ovate, deeply 3-partite, the segments mostly 3-lobed. Lobes of the lower leaves short, broad, obtuse; of the upper leaves narrow, rather long, acute. *Flowers* few at the apex of the stem, nodding, short-pediceled, whitish-yellow. *Scales* of corolla obovate-cochleate, entire, bearing dorsally 3 linear, acute, entire appendages, arising from near the base. *Staminodes* 2, spatulate-linear, laterally compressed, enclosed by the appendages and each with a shorter, subapical appendage.

Patagon., in shrubberies by Rio Sta. Cruz, and near Golfo de San Jorge. 3–30–40 cm. tall.

8. L. TRICOLOR Lam.?

Very *hispid* annual. *Stem* erect. Uppermost *leaves* sessile. Leaves opposite, basicordate, many-lobed; the lobes acute-dentate, the lower lobes often pinnatifid. *Pedicels* axillary. *Calyx-lobes* oblong, acuminate, as long as the *petals*, which are reflexed, yellow, their base with the scales red.

(Chili); N. Patagon., near Lago Nahuel-huapi.

9. L. VOLUBILIS Juss.

Stem twining. *Leaves* alternate or opposite, bipinnatifid; the ultimate lobes linear, obtuse. *Flowers* on terminal and axillary peduncles. *Calyx-*

lobes subdentate, half as long as the petals. *Flowers* small, the scales bilobed, 3-appendaged above externally.

(Chili); S. Patagon., in valley of Rio Gallegos, by O. Nordenskj.; steppes of West Patagon., by Dusén.

3. SCYPHANTHUS Don.

Twining, pubescent herbs, the *hairs* not stinging, with opposite, 2–3-pinnatisect *leaves*; and axillary, sessile, yellow *flowers*, having 5 saccate *petals*, alternating with smaller, cucullate, 3-awned scales; 10 *staminodes*, many *stamens*, a long narrow, stipe-like *ovary*, with few, small *seeds*.

Species 2, Chili, often at great elevations.

S. ELEGANS Don. (*Grammatocarpus volubilis* Presl.).

Leaves petiolate, scabrous, bipinnatifid; the segments linear, obtuse. *Calyx-lobes* ovate-obtuse, two thirds as long as the petals. *Capsule* linear, like a peduncle.

(Chili; called "Mongita," Indian name, "Fues"; cult. in European gardens); N. Patagon.

(Fig. in Eng. & Prantl, iii, 6*a*, p. 117, L. M.)

4. CAJOPHORA Presl.

Low or twining herbs, mostly with stinging *hairs*; and decussate, often crowded *leaves*. *Flowers* yellow, white, or red, rarely axillary. *Petals* mostly valvate, plane or cymbiform. *Nectaries* and *staminodes* of *Loasa*. *Ovary* inferior, with 3–5 parietal *placentæ*. *Capsule* obconic to clavate or globular, straight or twisted.

Species 50, in Andes, Brazil and Argentina.

Fig. in Eng. & Prantl, iii, 6*a*, p. 120.

1. C. CORONATA Hook. & Arn. (sub *Blumenbachia* by H. & S.).

Stem short, prostrate, to 30–60 cm. long. *Leaves* opposite, petiolate, pinnate and the pinnæ bipinnatifid with toothed, ultimate lobes. *Peduncles* axillary, 30 cm. long. *Calyx-lobes* 5, pinnatifid with linear segments exceeding the 3-merous ovary. *Furrows* of the fruit nearly straight.

(Chili, high on the Andes); Patagon.

2. CAJOPHORA PATAGONICA (Speg.).

Stem short, thick, erect, attenuate both ways, leafy below, naked above. *Leaves* long-petioled, subcordate, 3-partite, the segments 3-lobed; lobes of lower leaves short-obtuse, of upper leaves acute. *Flowers* terminal, few, short-pediceled, nodding, white-yellow. *Scales* obovate-cochleate, entire, with 3 dorsal, acute processes. *Staminodes* 2, spatulate-linear.

S. Patagon., by Rio Chico.

3. C. SCANDENS ORIENTALIS (My.). (*Loasa bergi* Hier.)

Leaves subovate, subsessile, pinnatifid, the lobes obtuse, long-linear. *Peduncles* 1-flowered, 8–10 cm. long. *Calyx-tube* hispid, with glochidiate awns. *Petals* yellow, subcucullate. *Stamens* many, in oppositipetalous fascicles. *Staminodes* 10. *Capsule* 10-costate.

N. Patagon., Rio Negro and Chubut.

5. BLUMENBACHIA Schrad.

Annual herbs, with sharply 4-angled, trailing *stem*, and opposite decussate *leaves*, with stinging and also hooked *hairs*. *Flowers* 5-merous, terminal, or solitary on 2-bracted, axillary peduncles; otherwise as in *Cajophora*. *Ovary* globular, becoming a fruit twisted to the left. *Placentæ* at first fleshy, afterwards drying, and enlarging for dissemination of the seeds.

Species 3, Argentina to Brazil.

B. SYLVESTRIS Poepp.

Setose, hispid, climbing. Lower *leaves* petiolate, elliptic-lanceolate, their lobes sinuate; upper leaves sessile, incise-toothed. *Flower* terminal, and solitary in the dichotomies. *Calyx-segments* entire; half as long as the petals.

(Argentina, cordilleras of Antuco); Patagon., Chubut.

B. SYLVESTRIS LEPTOCARPA (Speg.).

Upper leaves mostly ovate, basi-cuneate. The variety with fruits oblanceolate, instead of ovate.

Patagon., Chubut, in shrubberies near streams.

Family 74. CACTACEÆ. Cactus Family.

Fleshy, leafless plants (or with small *leaves*), the *stems* continuous or jointed and bearing spines arising from *cushions;* and *flowers* mostly solitary, large and showy, sessile, regular, and perfect. *Calyx-tube* adnate to the ovary, with many calyx-lobes and petals. *Stamens* numerous, inserted on the tubular axis. *Ovary* 1-celled, with parietal placentæ. *Fruit* a berry. *Seeds* numerous, with copious or scanty endosperm.

Species 1,000, nearly all American, xerophil plants.

KEY TO THE GENERA.

A. Not jointed, but angular or fluted or mamillate. Leaves reduced to scales. Flowers sessile on or near areoles. Perianth funnelform to salver-shaped, with a distinct tube. No barbed spines. Seeds mostly pendulous on long funicles.
  b. Stem long, fluted or angled. 1. *Cereus*, p. 591.
  *b*2. Stem short, globular to clavate, or short-columnar.
    c. Corolla greatly elongated, salver- or funnelform, with gradually widening tube; arising from the older parts of the ridges. 2. *Echinopsis*, p. 592.
    *c*2. Corolla shorter, salver- or funnelform. Stem conical or clavate. 3. *Echinocactus*, p. 593.
*A*2. Jointed; joints round or flat and leaf-like. Fugacious, cylindric leaves when young. Barbed spines. Seeds with short funicles, which broaden and surround them. Filaments not as long as the rotate corolla. 4. *Opuntia*, p. 593.
*A*3. As *Opuntia*, but spines not barbed; seeds lens-shaped. 5. *Maihuenia*, p. 595.
*A*4. Jointed; joints clavate, rounded apically, attenuate basally. Areoles spirally arranged, approximate, small, with scanty wool. Barbed spines in youth. Flowers small, terminal. Filaments shorter than the perianth. Seeds winged. 6. *Pterocactus*, p. 596.

1. CEREUS Haw.

Stem short or long, costate on the angles, pulvilligerous with lateral flowers. *Calyx-tube* prolonged above the ovary, with tomentose pulvilli. *Petals* many-seriate, exceeding the calyx-lobes, recurved-patent. *Stamens* free almost as long as the calyx-tube. *Ovary* exsert, spiny or scaly.

1. C. CŒRULESCENS Salm.

Erect, attenuate, 8-angled, cœruleous. *Costæ* obtuse, scarcely repand. *Cushions* large, oval, with black tomentum and short, gray wool. Central *spines* 3–4, rigid, black; lateral radiant, slender, white, save at extremities.

Color beautiful dark-green. *Flowers* rare, with white *petals*, externally green; and with red-topped green *scales* imbricating the floral tube.

(Brazil); common by Rio Negro, N. Patagon.

2. CEREUS DUSENI Web.

Small, 20–60 cm. high. *Stem* 6–8-costate, the *cushions* rather remote, with many spines. Long, central *spines* 1–3, erect, uncinate at apex; shorter radiating spines 6–10, acute.

N. Patagon., by Rio Negro; Chubut, rocky precipices near Trelew.

"A most distinct species, near *C. bertinii* Cels." (Speg.)

3. C. LAMPROCHLORUS Lem.

C. LAMPROCHLORUS SALINICOLA Speg.

Trunk cylindrical, 59–150 cm. long, 7–10 cm. thick, apically rounded, erect, not branching, but basally proliferous, very green. *Costæ* 10–12, obtusely rounded. *Areoles* hemispherical-orbicular, white velvety at first; subsequently fuscous, having V-formed sulci above. *Spines* 14–16(–20), ochroleucous, of which 4–5 are slightly stouter. *Flowers* with scent of roses, solitary in the upper lateral areoles, large (24 cm. long), with subglobose *ovary*. *Petals* green-reddish externally, white internally. Stamens many, 2-seriate, some deflexed, others erect and white like the 15-cleft *style*.

N. Patagon., between Rio Negro and Rio Colorado; Bahia Blanca.

4. C. PATAGONICA Web.

Fruit ovate, dry, white to pink, with short, dense, white villosity and fine, blackish *setulæ*, 5–15 mm. long. *Seeds* black, glabrous, areolate.

S. Patagon., near Sta. Cruz.

2. ECHINOPSIS Zucc.

Stem depressed, costate, globose or cylindrical. *Calyx-tube* long, pulvilligerous; the lobes numerous. *Stamens* 2-seriate, the outer adnate to the calyx, the inner free. *Ovary* covered with setæ. *Berry* scaly. *Cotyledons* small, connate.

Species 10.

E. LEUCANTHA Walp. (Pfeiff. sub *Cereus*).

Stem not richly developed, globose or ellipsoid, ashy-green. *Spines* bent, very large, over 2 cm. long. "Honey-yellow." *Flowers* large, white or subrubescent.

(Argentina); N. Patagon., by Rio Negro and Rio Neuquen.

3. ECHINOCACTUS Lk. & Otto.

Stems globose to cylindric, with tubercles in rows, bearing clusters of spines. *Flowers* on the subterminal tubercles. *Calyx-tube* prolonged, scale-crowned, its outer lobes scale-like, and its inner lobes prolonged. *Petals* and *stamens* numerous, perigynous. *Ovary* exserted.

Species 200, from the W. United States to Brazil and Chili.

1. E. ACUATUS Lk. & Otto.

Subglobose, glaucescent, the vertex not distinct, *costæ* 20-acuate, not laterally impressed, the spines 7, spreading recurved, hoary-brown, 8–12 mm. long. *Sulci* broad.

E. acuatus tetracantha Lehm.

N. Patagon., on rocky hills near Rio Negro.

2. E. GIBBOSUS DC.

Ovate or oblong-obtuse; *costæ* vertical, interrupted, tubercled; some of the *tubercles* apically subtomentose, bearing straight, rigid *needle-spines*, others in a different series long-mammose and subcompressed. *Flowers* 2, the largest of the genus, near the depressed apex, with greenish-tube, distant *sepals*, having a white, expanded limb, 4-serial lobes obovate, submucronate.

(Jamaica); N. Patagon., by Rio Negro.

E. GIBBOSUS CEREBRIFORMIS.

A monstrosity; the *ribs* greatly contorted, and the *spines* short.

N. Patagon., by Rio Negro.

E. GIBBOSUS CHUBUTENSIS Speg.

Differs from the species by the *stature* being low, the *color* intensely ashy-glaucous, the *spines* less numerous, and the *flowers* manifestly larger.

Chubut, in plains along Rio Chubut.

4. OPUNTIA Haw. Prickly Pear.

Plants jointed, their *joints* flattened or cylindric, with small, subulate, deciduous *leaves*. *Cushions* spine-bearing. *Calyx-tube* not prolonged.

Petals numerous, slightly united at the base. *Stamens* very numerous, in several series. *Ovary* cylindric, exserted, becoming a pyriform *berry.*

Species 150, chiefly from Mexico to Chili; a few in the United States. Some have been introduced into the Old World, and run wild. (Fig. in Eng. & Prantl, iii, 6a, p. 170, C, G, and 201.) *O. opuntia* (L.) Coult., (*O. vulgaris* Mill.) of American origin is now spreading over the tropical parts of the Old World. Its fleshy fruit is edible.

1. OPUNTIA DARWINII Hensl.

Prostrate, branching shrub, about 5 cm. high, olivaceous. Joints egg-form, scarcely tuberculate. *Spines*, especially when young, entire (not trifid). *Flowers* on top of the uppermost joint, yellow.

Patagon., by Rio Negro; Rio Chubut; Puerto Deseado; in gravelly deserts near Rio Chico.

2. O. PATAGONICA Phil.

Joints subclavate, bright green. *Cushions* covered by a short, white tomentum. *Spines* whitish, 1 compressed, 26 mm. long, and 2 only 1.3 mm. long. *Leaves* 3 mm. long.

Patagon.

3. O. PENICILLIGERA Speg.

Platyopuntia. Armed, low, subprostrate.. *Joints* orbicular or broad-obovate, dull green, plane or slightly convex. *Areoles* not umbonate, rather lax, usually with whitish slender torted *spines*, the central one long, and 1 or 2 laterals shorter and weaker; rarely none; when old retrorsely appressed; with large and rather long pencils of rusty glochidia. *Flowers* lemon-colored. *Fruit* clavate, green to rufous.

N. Patagon., between Rio Negro and Rio Colorado; Bahia Blanca and Neuquen.

4. O. PLATYACANTHA S. Dick.

Low, branching; the *branches* divaricate, cylindrical, not very tuberculate, shining brown. *Cushions* large, immersed, fulvescent, with setaceous *tomentum*, and with diversely-formed *spines*. Lowest spines 3–4, slender, white appressed. Upper ones 2–3, longer, reed-like, gray.

(Chili); Patagon., Chubut.

5. OPUNTIA SULFUREA Gill.

Joints erect, subglobose, bright green. *Cushions* crowded. *Spines* of 2 forms, from a pallid tomentum; the upper setaceous, black-purple, minute, the lower 6–12, long, acicular, white, with purplish apex; the central one longest.

(Central provinces of Chili); N. Patagon., common by Rio Negro.

(Spegazzini refers to 2 other undescribed species, one by Rio Sta. Cruz, the other by Lago Argentino.)

5. MAIHUENIA Phil.

Low, almost shrubs, of habit of *Opuntia*, branched, forming large masses, with arrow-shaped, caducous or subpersisting *leaves*, and areoles having wool, but no glochidia. *Spines* sagittate, round. *Flowers* short-stalked, from a subterminal areole; regular, not large. *Ovary* pitted, leafy, and woolly, the wool from the axils of the leaves. *Ovules* numerous. *Perianth* radiate, without a tube; *stamens* shorter; and *style* still shorter. *Berry* soft. *Seeds* nearly lens-shaped, shining, black.

Species 6, Chili and Argentina. Allied to *Pereskia* by its seeds and absence of glochidia; to *Opuntia* by its habit.

1. M. PHILIPPI Web.

Root thick, sending from its crown many branches which make a pulviniform mass, 10–20 cm. diam. *Branchlets* green, subglobose. Older *areoles* foveoliform, emitting 3 *spines*, a central flat spine 10–15 mm. long and smaller laterals, all white, paler apically. *Leaves* numerous at end of branches, subpersistent, cylindraceous, green. *Flowers* sessile on the extremity of the branch, 30 mm. long, green to white-rose, with scales and often setulæ upwards; inner *petals* white.

N. Patagon., in mountains at Neuquen; native name *Espina blanca.*

2. M. POEPPIGII Web.

Shrub-like; profusely branching, prostrate, forming cespitose masses, pale green. *Spines* solitary, subulate, about 2 cm. long, yellowish. *Leaves* cylindraceous, 1 cm. long, often persisting. *Areoles* circular, 1–1.5 mm. diam. *Flowers* sulphur-yellow. *Berry* subovoid, 4 by 2 cm.

Patagon., Chubut on dry rocks near Trelew.

3. MAIHUENIA TEHUELCHES Speg.

Fruticose, intricately *branching*, dull green. *Joints* cylindro-elliptical or subclavulate. *Leaves* ovate, small. *Spines* 3, the central erect, large (20–40 mm.), the laterals divaricate, small. *Flowers* subapical, sessile. *Ovary* short turbinate-hemispherical, scaly, glabrous, scarcely setulose. Outer *petals* yellow-white, inner white. *Fruit* globose to hemispherical, not juicy.

Patagon., between San Julian and Rio Deseado; along Rio Chubut; Neuquen. Native name, *Chupa sangra.*

4. M. VALENTINI Speg.

Fruticose, intricately *branching*, dull green; *articulations* none or obscure. *Leaves* ovate, small. Spines 3, the central erect, very large, flat, the lateral subretrorse, small. *Flowers* apical, sessile. *Ovary* short, scaly, scales at the axils long white-bearded, with few setulæ. Floral *leaves* ruddy externally, inner ones white.

Chubut, near Trelew, and by Rio Chubut.

6. PTEROCACTUS K. Schumann.

Cespitose, with club-shaped off-sets. *Cushions* spiral, approximate, circular to obovate, small, with sparse wool; *glochidia* in the young, fugacious. *Spines* 9–12, small (1 mm.), white. *Flowers* small, terminal. Ovary gradually passing to the branch, with glochidiiferous cushions. Outer *perianth-leaves* fleshy green; inner petaloid, spatulate. *Stamens* shorter than the perianth. *Style* with many stigmas. *Capsule* dry, with circumscissile dehiscence. Seeds winged.

1. P. KUNTZII K. Schumann?

An elliptic to subglobose, radical tumor, with smooth epidermis sending out terete branches; which are apically rounded and with minute fascicles of *hairs*. *Spines* 6–14; of these 1–4 in the center are shorter and stout. *Stamens* irritable when touched. *Capsule* dry, circumscissile. *Seeds* white.

Common by Rio Negro, N. Patagon., a small plant, about a finger-length, its branches 5 mm. thick.

2. Pterocactus valentini Speg.

Subtuberous undershrub, branching from the base, cespitose, glaucescent. The *branches* short, thick, terete, obtuse. *Spines* 25–35, all hyaline, slender, retrorsely plicate. *Flowers* fuscous-yellow.

Patagon., at Trelew and Valdez Penins.; between San Julian and Rio Deseado; by Rio Sta. Cruz. Very polymorphous.

Family 75. Thymeleaceæ. Mezereon Family.

Shrubs or trees with tough *bark*, simple, entire, *exstipulate leaves*, and regular, mostly perfect *flowers*. *Petals* often wanting. *Stamens* borne on the calyx, as many, or twice as many as its 4–5 lobes. *Ovary* 1-celled, 1-ovuled (rarely 2); *ovule* pendulous. *Fruit* a berry-like drupe.

Species 425, most in Austral. and S. Africa.

Key to the Genera.

(All the following are apetalous, and have 1-celled ovaries.)

A. Stamens twice as many as the sepals, 2-seriate. Fruit a drupe or nutlet. Calyx normally developed.

b. Hermaphrodite. Style and filaments very short. Stigma capitate. Receptacle cylindrical. 1. *Daphne*, p. 597.

b2. Diœcious. Style and filaments very long, exceeding the short, funnelform receptacle. 2. *Ovidia*, p. 598.

A2. Stamens as many as, and alternating with, the 4 sepals; often also 4 or 8 glandular, antisepalous staminodes. Small moss-like plants. 3. *Drapetes*, p. 598.

1. DAPHNE Linn. Mezereon.

Shrubs, with alternate *leaves* or small, pink or white *flowers*, clustered at the nodes in the leaf-axils or at the base of innovations. *Petals* none. *Calyx* tubular, 4-merous, its lobes spreading. *Stamens* 8, scarcely any protruding. *Ovary* sessile. *Stigma* subsessile, capitate.

Species 40, chiefly Eurasiatic.

D. pillo-pillo.

Leaves elliptical-oblong, elongate, acute, glabrous on both surfaces. *Flowers* crowded, terminal, umbellate, the perianth-segments oblong-ovate, silky outside, glabrous internally.

S. Chili, Valdivia.

DAPHNE TENERA Phil.

Leaves herbaceous, glabrous, narrow-oblong, obtuse, the veins (except the midrib) obscure. *Flowers* umbellate, with capillary pedicels, equalling the oblong fruit, which is attenuate in both directions.

By Rio Palena in W. Patagon.

2. OVIDIA Meisn.

Shrubs of habit of *Daphne*, with thin, coriaceous, alternate, subsessile, narrow *leaves*, and terminal *umbels* with 1–2 deciduous bracts. *Flowers* unisexual, mostly diœcious, 4-merous. *Receptacle* funnelform, hairy outside. *Calyx-leaves* spreading; *petals* none. *Stamens* 8, in 2 series, with long filaments. *Ovary* sessile in the receptacular cup, 1-celled. *Style* long, with small, capitate stigma. *Fruit* a drupe.

Species 5, chiefly in Chili.

O. TENERA (Phil. sub *Daphne*).

Leaves herbaceous, glabrous, narrowly oblong, obtuse, the veins not conspicuous, excepting the midrib. *Flowers* umbellate, on capillary pedicels, as long as the oblong, doubly attenuate fruit. *Peduncle* 12 mm. long; *pedicels* 6–8 mm.; plant 9 cm. high.

S. Patagon., by Lago Argentino; W. Patagon., by Rio Palena.

3. DRAPETES Banks.

Cespitose shrubs, with small, coriaceous, imbricating *leaves*, and *heads of flowers* at the ends of the branches and also among the leaves. *Stamens* 4, as many as, and alternate with, the perianth-lobes. *Berry* 1-seeded.

Species 5, in Antarctic Amer., Papua, Australia, Borneo, and New Zealand.

D. MUSCOIDES Lam.

Perianth-throat without scales. *Receptacle* glandless. *Leaves* decussate, sessile, oblong-lanceolate, obtuse, appressed-pilose. *Peduncles* simple, erect, naked. *Involucral leaves* 4, minute, equalling the flower.

E. and W. Magellan; Fuegia to Cape Horn; S. Patagon., by Rio Azopardo (Dusén); Falklands. (Fig. in Eng. and Prantl, iii, 6a, p. 244, C.)

Family 76. LYTHRACEÆ. Loose-strife Family.

Mostly herbs, with opposite, exstipulate *leaves* and perfect, perigynous, 4–6-merous *flowers*. *Petals* as many as the calyx-lobes, inserted on the calyx, or none. *Stamens* various, inserted on the calyx. *Ovary* 2–6-celled (rarely 1-celled). *Style* 1. Seeds usually many, without endosperm.

Species 350, most in tropical America.

KEY TO THE GENERA.

A. Flowers 4–6-merous, cyclic, but stamens sometimes inclined to one side.
  b. Fruit not or irregularly dehiscing, subglobose. Pedicel 1-flowered. Herbs. 1. *Peplis*, p. 599.
  b2. Fruit a septicidal or septifragal oblong capsule; with two simple or apically cleft valves. Herbs or small shrubs. 2. *Lythrum*, p. 599.
A2. Flowers 6-merous, bilaterally symmetrical. Of the stamens at least the dorsal one is always wanting.
  b. Anthers transversely fixed. Stamens 11 (rarely 9, 6 or 4). Placenta after dehiscence of capsule, and calyx bent back. Dorsal petals enlarged. Herbs or shrubs, often viscous. 3. *Cuphea*, p. 600.
  b2. Anthers basifixed. Stamens 11 (or 6–7). Fruit indehiscent. Leaves rigid, often pungent. 4. *Pleurophora*, p. 601.

1. PEPLIS Linn.

Small, marsh annuals, with entire, obovate or narrow, glabrous *leaves*, and small, solitary, mostly 6-merous *flowers*, sessile in the axils. *Calyx* with 5–6 accessory teeth. *Petals* sometimes wanting. *Filaments* short, anthers didymous. *Style* short; *stigma* capitate. *Ovary* 2-celled.

Species 3, Eurasia and N. Africa.

P. PORTULA Linn.

Leaves creeping, obovate-subrotund, narrowing to a petiole. (Fig. in Eng. & Prantl, iii, 7, p. 8.)

N. Patagon., by Rio Negro (from Europe).

2. LYTHRUM Linn. Loose-strife.

Stems 4-angled, with entire *leaves* and *flowers* having a straight, cylindric calyx-tube, 8–12-ribbed, with 4–6 primary teeth and as many intermediate secondaries. *Petals* 4–8. Stamens 8–12. *Fruit* 2-celled, enclosed in the persisting calyx.

Species 23, widely distributed.

LYTHRUM HYSSOPIFOLIUM Linn.

Flowers axillary, solitary, pink-purple. *Leaves* sessile, most of them alternate, or the lowest opposite, oblong, obtuse; those of the branches much smaller than those of the stem. *Stamens* included.

(Eurasian; naturalized in N. Amer. and the Andes); N. Patagon., by Rio Negro.

3. CUPHEA P. Browne.

Herbs or undershrubs, often viscous, with entire *leaves*, and interpetiolar, 1–many-flowered peduncles. *Calyx* tubular, several-ribbed, gibbous, 6-toothed or also with 6 additional accessory teeth interposed. *Petals* 6, 2 of them larger; or none. *Stamens* 6–11, 2 of them shorter; or rarely 12. *Ovary* unequally 2-celled. *Stigma* capitate, 2-lobed. *Capsule* enclosed in the calyx.

Species 157, American, most in extratropical Brazil and Mexico. (Fig. in Eng. & Prantl, iii, 7, p. 8, H–Q and R–U.)

1. C. GLUTINOSA Cham. & Schl.

Clammy; pubescent, mixed with long, glandular *hairs*. *Stem* branched at the apex. *Leaves* short-petioled, lanceolate, acute. *Calyx* with a short spur. *Petals* shorter than the calyx, violet. *Stamens* 6. *Style* villous. *Ovules* 4–15.

(Brazil); N. Patagon., near the mouth of Rio Negro.

2. C. HYSSOPIFOLIA Kth.

Undershrub, with strigose branches. *Leaves* lanceolate, acutish, rather obtuse at their base, glabrous above, but strigose-hairy on the midrib and veins. *Flowers* alternate, pale-violet. *Calyx* glabrous. *Stamens* included. Filaments villous. *Seeds* 5–6.

N. Patagon.

3. C. SPICATA Cav.

Erect, annual, branching, hairy. *Leaves* petiolate, ovate-oblong, acute both ways, glabrous, the margin scabrous. *Axillary* and terminal spike-like racemes, with opposite pedicels. *Calyx* hirtellate. *Petals* unequal, small, pink. *Stamens* 12.

(Trop. Amer.); marshes of N. Patagon.

4. PLEUROPHORA Don.

Calyx straight tubular, striated, 10–14-toothed, the alternate teeth spiny. *Petals* and stamens 5–7. *Capsule* 1-celled, 3–4-seeded. *Flowers* small, in terminal, bracted *spikes*, 4-angled.

Species 5, S. Amer.

P. PATAGONICA Speg.

Glabrous shrub 12 cm. high to 30 cm., with very small, ovate-lanceolate, mucronate-pungent *leaves*, imbricated in 4 rows on thick branches. Old *branches* naked. *Petals* spatulate, entire, pink. *Stamens* long exserted. Beautiful.

Patagon., near Gulf of San Jorge; Trelew.

Family 77. MYRTACEÆ. Myrtle Family.

Trees or shrubs, with mostly simple, entire, punctate, exstipulate *leaves*, and superior *flowers* having the perigonial tube adnate to the ovary, and supporting the 4–6 *sepals*, and as many *petals*, and the numerous *stamens*. *Ovary* mostly of 2 or more united carpels, 2–many-celled, with axile *placentæ;* rarely 1-celled. *Style* simple. *Seeds* 2–many, mostly without endosperm.

Species nearly 3,000, having two centers, tropical S. Amer., and Australia; less abundant in tropical Asia, Polynesia, and Africa. *Myrtus communis* L. reaches the Mediterranean region; and some species occur in Tasmania and N. Zealand. They reach the northern borders of Patagonia, and one is found as an exceptional case in Fuegia. But there are no woody representatives of the family in the Magellan region or further south.

KEY TO THE GENERA.

A. Fruits berry-like, rarely drupe-like. Stamens in the bud attaining nearly their full length. Sepals free, even in the bud.
  b. Embryo horseshoe-shaped or spiral. Radicle exceeding the minute cotyledons. Filaments nearly straight in the bud.
    c. Sepals massive, prostrate in the bud. Filaments filiform, with punctiform glands next the connective; anthers dorsifixed, partly versatile.
      d. Capsule chambered only above. 2. *Myrteola*, p. 602.
      d2. Capsule chambered from the base. 3. *Myrtus*, p. 603.
      d3. As *Myrtus*, but seeds subhorizontal on placentæ at midheight. Sepals ciliated. 5. *Blepharocalyx*, p. 604.

*c*2. Sepals reflexed in the bud. Filaments flat, insensibly passing to the connective which exceeds the anthers. Peduncles 1-flowered. Flower often 4-merous. 1. *Ugni*, p. 602.

*b*2. Embryo with very short radicle and large, thick cotyledons. 4. *Eugenia*, p. 604.

*A*2. Fruit a dry, loculicidal capsule. Placentæ basal. Solitary flowers, with protruding, versatile anthers. 6. *Tepualia*, p. 605.

1. UGNI Turcz.

Shrubs like Myrtle, with solitary, axillary flowers. Sepals linear, reflexed even in the bud. Petals 5, subglobular. Filaments short, flat, insensibly passing into the connective which bears the anther on its inner face. Style 1, exceeding the stamens; stigma capitellate. Bracts 2, linear, close to the flowers, like extra sepals.

Species 11, Andine.

U. UGNI (Mol.). (*Myrtus ugni* Molina, 1828; *Ugni molinæ* Turcz; *Eugenia ugni* Hook. & Arn.)

Low, red, musky shrub, with warty branches because of leaf-scars. Leaves petiolate, coriaceous, ovate-oblong, acute, apiculate, revolute, not dotted, white underneath, veins obscure. Peduncles glabrous, recurved-patent, as long as the leaf.

(Chili and Bolivia; "uni" is the Indian name); W. Patagon. and Chonos Archipelago. (Fig. in Eng. & Prantl, iii, 7, p. 65, C–F.)

The name *Ugni molinæ* cannot stand, as it violates the law of specific priority. It is under protest that we amend it into the duplex form given above. In all such cases we suggest that priorities and decency may both be conserved by simply inverting the name first given; calling it *Ugni myrtus* (Mol.). But we do not venture on such an innovation here.

2. MYRTEOLA Berg.

Dwarf shrubs, with axillary *flowers* and partially 1-celled *ovary*, and 2–4 parietal, intruding *placentæ*, and broad-capitate *stigma;* otherwise as *Myrtus.*

Species 8, chiefly Andine.

M. NUMMULARIA (Poir.) Berg.

Low, spreading, glabrous, with *wiry stem and branches. Peduncle* 1-flowered, shorter than the leaf, 2-bracted under the flower. *Flower* 4-fid white, with few *stamens.* *Leaves* subrotund, small, evergreen, shining. *Berries* red, fleshy, edible.

(S. Chili); Patagon., Fuegia; Staaten I.; Falklands. "On dunes, having the habit of wild thyme. Common, spreading over the ground. It forms peat, and its leaves are used as a surrogate, or substitute, for tea. Malouine-tea."

3. MYRTUS Linn.

Leaves opposite, punctate, pinnately-veined. *Peduncles* axillary, 1-many-flowered. *Ovary* 2–3- rarely 4-celled; *ovules* many. *Fruit* a berry, enclosed in the adnate perigonial tube, mostly surmounted by the calyx-limb. *Seeds* hippocrepiform. *Radicle* long; cotyledons aborted.

Species 50, in warm countries, chiefly southern, except S. Afr. and Madagascar.

1. M. LUMA Barn.

A tree, with the young branches, petioles and peduncles pubescent. *Leaves* elliptic-oblong or ovate-oblong, doubly attenuate, the midrib and borders puberulous, pale on the under surface. *Racemes* axillary, 2–6-flowered, as long as the leaves or longer. *Peduncles* 1–2 cm. *Sepals* and *petals* 5 mm. long. *Ovary* bilocular. *Berry* shining, black, globose.

N. Patagon., in groves around Puerto Nuevo in Lago Nahuel-huapi.

2. M. RELONCAVI Bern.

Small tree, 3–4 meters high. *Leaves* thickish, more glaucous than in Chilian species, glabrous on the two surfaces, the *nerves* slightly or not projecting on the surface.

Magellan, Otway. (Savatier.)

3. M. VALDIVIANA Phil.

Young branches puberulous. *Leaves* ovate-lanceolate, doubly attenuate, acute, the nerves of the dried leaves prominent on the under surface, which is scarcely paler than the upper surface. *Leaf* and petiole 2–3 cm. long. *Flowers* small, 3–5 in a raceme which scarcely exceeds in length the leaf. *Sepals* and *petals* 5, the petals only 3–4 mm. long. *Ovary* short. *Berry* black.

(Chiloe); Patagon., in woods about Lago Nahuel-huapi.

4. EUGENIA Linn.

Like *Myrtus*, except that the *seeds* are few (1–4), globose-compressed, with thick, fleshy *embryo*, short radicle, and thick, often conferruminate, *cotyledons*.

Species 625, tropical, most in S. Amer.

1. E. APICULATA DC.

Peduncles slightly exceeding the leaf, bifid, 3-flowered, the mid-flower sessile, the laterals on 2-bracteolate, pubescent pedicels. *Leaves* oval, mucronate, apiculate, pubescent underneath. *Calyx-lobes* attenuate below; *petals* ciliate.

E. APICULATA ARNYAN.

Leaves glabrous, broad-oval. *Peduncles* 1-flowered.

W. Patagon., Chonos Archip.; Chiloe I.

2. E. DARWINII Hook. f.

Small shrub, with cracked, gray *bark;* pubescent branchlets and elliptic-oblong *leaves*, 2 by 1 cm., abruptly acuminate, obscurely punctate, and thick-margined. *Peduncles* few-flowered, pubescent, as long as the leaves; pedicels with several bractlets. *Calyx* 5-cleft, the segments obtuse. *petals* white. *Stamens* as many, and twice as long, as the petals.

W. Patagon., Cape Tres Montes.

3. E. PROBA Berg.

Young *branches* villous. Adult *leaves* smooth, ovate, acuminate; the same color above and below, 2 by 1 cm. *Peduncles* solitary, 1-flowered generally as long as the leaves. *Bracts* small, caducous. *Sepals* obtuse. *Petals* large. *Ovary* smooth. *Berry* unknown.

N. Patagon., in woods at Puerto Blest, Lago Nahuel-huapi.

5. BLEPHAROCALYX Berg.

Trees or shrubs, with *flowers* in cymes. *Calyx-divisions* 4; *petals* 4. *Ovary* 2–4-locular, with many subhorizontal *seeds*, on *placentæ* at mid-height of the wall. *Seed-coat* leathery. Otherwise as *Myrtus*.

Species 28, S. Amer.

BLEPHAROCALYX CRUCKSHANKSII (Berg), Ndz.

Tree, with young branches compressed, and like the *young leaves* and peduncles, setose-hairy. *Leaves* ovate-oblong, obtuse or shortly apiculate, attenuate baseward, more pale beneath, the lamina 5 cm. long. *Inflorescence* 2–4-cleft, as long as the leaf. *Ovary* 4-locular. *Sepals* ciliated.

(Chili); Patagon., in woods west of Lago Nahuel-huapi.

6. TEPUALIA Griseb.

Branching, glabrous shrub, with small, opposite *leaves*, and solitary, rarely 2–3 *flowers* on axillary peduncles bracted at the middle. *Calyx-tube* broad-campanulate, adnate to the base of the ovary, with a spreading free part. *Fruit* a 3-celled capsule, with basal *placentæ*. *Stamens* many, much exceeding the petals.

Species 1, viz.:

T. STIPULARIS Griseb. (*Metrosideros stipularis* Hook. f.).

A stout shrub or tree. Glabrous, with leafy, tetragonal branchlets. *Leaves* small, short-ovate, distichous, pellucid-punctate; with basal glands. *Calyx* 5-keeled, its teeth erect, obtuse.

(Chili); W. Magellan, "in the rainy zone; as high as a man."

T. STIPULARIS PATAGONICA Phil.

Leaves widely oval, 6 mm. long, 4–5 mm. broad. *Sepals* more obtuse than the species.

Patagon., near Lago Nahuel-huapi.

T. STIPULARIS PHILIPPIANA Griseb.

A shrub less high than the species, with *leaves* having the lamina only four times as long as the petiole.

W. Patagon., in shrubberies near Rio Aisen.

(*Metrosideros* Banks, which is allied to *Tepualia*, though not found in America, holds an important place in other southern lands.)

Family 78. ONAGRACEÆ. Evening-primrose Family.

Herbs or shrubs, with mostly 4-merous, regular *flowers*, and inferior *ovaries; stamens* 1–2 times as many as the petals, *inserted* along with them on top of the calyx-tube, or on an epigynous disk. *Ovary* usually 4-merous, ovules many. *Seeds* small, with scanty endosperm.

Species 350, most in America.

KEY TO THE GENERA.

A. Capsule globular or cylindric; floral axis not produced above it; and calyx not deciduous. Flowers bracted, 4–6-merous. Stamens 8–12, in 2 series. Marsh plants with ærenchyme. 1. *Jussieua*, p. 606.

A2. Capsule with floral axis more or less prolonged above it, constricted and deciduous. Flowers not bracted, 4-merous.

b. Seeds crowned with a plume. Stamens 8, unequal. Pollen in tetrads. Stipules none. 2. *Epilobium*, p. 607.

b2. Seeds naked, coriaceous, or crowned. Calyx-limb reflexed. Pollen-grains separate.

c. Floral tube long-cylindric.

d. Stamens unequal, filaments short. Corolla-tube with a hairy crown. Stigma-lobes short. 3. *Godetia*, p. 611.

d2. Stamens equal, with very long filaments. Anthers versatile. Stigma 4-branched, branches linear. Seeds ovoid, ascending. Flowers yellow, erect in the bud. 4. *Œnothera*, p. 611.

c2. Floral tube short-campanulate. Stamens 1-seriate. Stigma unbranched, capitate. Capsule sessile, linear. Seeds naked. Herbs with small leaves. 5. *Chamissonia*, p. 614.

A3. Fruit a fleshy berry. Floral axis prolonged, colored, deciduous. Flowers bractless, 4-merous, with 8 stamens. Mostly shrubs with opposite leaves and deciduous stipules. 6. *Fuchsia*, p. 615.

1. JUSSIEUA Linn. (*Jussiæa* Lour.)

Water-plants, mostly with cortical, spongy tissue (ærenchyme); and 4–6-merous *flowers*, having the calyx adnate to, but *not prolonged* above, the globose or cylindric capsule. *Stamens* 8–12, in 2 series.

Species 36, tropical, many in Brazil. (Fig. in Eng. & Prantl, iii, 7, pp. 206, 207.)

J. REPENS Linn. (*Cubospermum palustre* Lam.)

Glabrous, creeping. *Leaves* oblong-obovate, retuse, petioled. *Flowers* long-pedicelled, slightly callous at the base. *Calyx* villous, its tube cylindric, attenuate below; its lobes 5, lanceolate. *Petals* only half as long, obovate.

("Everywhere over the tropics; used medicinally.") N. Patagon., by Rio Negro. (Eng. & Prantl, l. c., fig. 85, D, H.)

2. EPILOBIUM Linn. Willow-herb.

Leaves alternate or opposite. *Calyx-tube* linear, produced above the ovary. *Petals* 4, obovate or obcordate. *Stamens* 8. Seeds with an apical tuft, at maturity pushing each other out of the acrofugally-dehiscing *capsule.*

Species 65, chiefly in temperate regions.

KEY TO THE SPECIES.

- *A.* Herbs.
  - *b.* Rhizome creeping, stoloniferous. Petals pale.
    - *c.* Leaves opposite below, crowded above, ovate, acute, glabrous. Flowerbuds purplish. *australe.*
    - *c2.* Leaves opposite, subconnate by their broad base, hairy, toothed. *lechleri.*
  - *b2.* Rhizome stoloniferous. Petals pink. Leaves glaucous, all sessile, smooth, ovate-oblong. Buds slightly drooping. *cæsium.*
  - *b3.* Rhizome long. Lower leaves obovate, sessile, purplish; upper leaves narrower. Innovations with long pointed leaves. *drummondii.*
  - *b4.* Rhizomes short, fibrilliferous, with gemmæ. Leaves not basi-connate, ovate-lanceolate, obtuse, their traces hairy. Flowers small, pink. *valdiviense.*
- *A2.* Herbs with tetragonal, erect stems, lance-oblong leaves, and entire stigma.
  - *b.* Leaves acute, attenuate-petiolate, glabrous. *adnatum.*
  - *b2.* Leaves obtuse. Flowers few, pink to white. *palustre.*
  - *b3.* Stems with basal horizontal branches. *tetragonum.*
- *A3.* Undershrubs, with the clavate stigma.
  - *b.* Leaves ovate-oblong, obtuse, broadly sessile, and with reddish innovations. Leaves glabrous to glaucous, narrowing both ways. *glaucum.*
  - *b2.* Stoloniferous with gemmæ. Leaves small, basally subconnate, hairy. Flowers pink. *magellanicum.*
- *A4.* Undershrub with large rhizome and short stem. Leaves sessile, oblong-lanceolate, basicuneate, pubescent both surfaces. Flowers purple, solitary or few. *densifolium.*

1. E. ADNATUM Griseb.

Stem erect, tetragonal. *Leaves* oblong-lanceolate, serrate, acute, glabrous, attenuate to a petiole. *Stigma* undivided. *Capsule* puberulous. (See note under *E. tetragonum.*)

(Eur., Chili); Magellan, common.

(*E. antarcticum* sub *E. lechleri,* and *E. tetragonum.*)

2. EPILOBIUM AUSTRALE Poepp. & Hauss.

Rhizome long, creeping, stoloniferous. Lower *leaves* opposite, dilated at base, crowded, obtusely lanceolate. *Stem* arcuate, ascending at base, with dead leaves, simple, 10–30 cm. high, terete below, above having decurrent leaf-traces; glabrescent below, with sparse, appressed hair above. *Leaves* thickish, sessile, crowded upwards, ovate, obtuse, glabrous, 2–3 cm. by 8–14 mm.; the young hairy on nerves and margins. *Lower leaves* ovate, entire, obtuse; intermediate leaves with small teeth. *Flower-buds* purplish. *Flowers* 5 mm. long; *petals* pale, rather exceeding the calyx. Stigma narrow, clavate. *Capsules* purplish, becoming 5 cm. long, smooth.

Fuegia, Ushuaia; Orange Harbor; Falklands; Magellan (Dusén), "in steppes especially by water-pools."

3. E. CÆSIUM Hauss.

Herb, with creeping *rhizome* and *stolons*. *Stem* ascending-erect, subsimple, few-leaved, cylindrical, obscurely marked by decurrent lines, pubescent upwards. *Leaves* glaucous, all sessile, ovate-oblong, the lower with entire or denticulate margin, 25 mm. long. *Buds* ovoid, obtuse, slightly drooping. *Sepals* ovate-lanceolate. *Petals* pink, slightly exceeding the calyx. *Capsule* rather glabrous, 6 cm. long with short hairs. *Seeds* attenuate both ways.

(Near *E. andicum*, from which it differs by the glaucous, shorter and broader leaves, smaller flowers and shorter capsules.)

(Chili); Patagon., Chubut, in swamps by streams.

4. E. DENSIFOLIUM Hauss.

Stems short, 10 cm. high, simple, few-flowered, glandular-hairy. *Rhizome* large, woody. *Leaves* opposite, except above, sessile, oblong-lanceolate, basicuneate, pubescent on both surfaces, 1–2-finely toothed on each side, 10–15 mm. long. *Buds* ovoid, acute. *Flowers* solitary or few. *Sepals* lanceolate, apiculate, smooth. *Petals* purple, exceeding the calyx. *Capsules* 3 cm. long, when young ashy pubescent, at length covered by spreading hairs. *Seeds* oblong-obovoid, basi-attenuate, papillose.

(Chili.)

5. EPILOBIUM DRUMMONDII Hauss.

Long *rhizome*, with few fibrils, sending out hypogæan gemmæ. *Lower leaves* purplish, broadly sessile, obovate on a terete stem; *upper leaves* narrowing, on a stem with elevated lines. *Flowers* numerous; *petals* one third longer than calyx. *Stigma* clavate. Peculiar *innovations* with large, sessile, pointed leaves nearly truncate at their base.

(Rocky Mts.) "Possibly the same as in the Falkland Is., confounded by Hooker with *E. australe*." (Haussknecht.)

6. E. GLAUCUM Ph. & Hauss.

Suffruticulose, with long rootstock, often multicipital, and with purplish scions; having opposite innovating leaves, remote, thick, reddish, ovate-long, obtuse, broadly sessile, 4 mm. long. *Stem* erect or ascending, glabrous and glaucous-pruinose, often purplish below, leafy, 30 cm. high, often with erect branches above.

Leaves glabrous, glaucous, rarely subverticillate, narrowing both ways; lower leaves oblong, obtuse, subentire; upper leaves narrowing, few-toothed. *Flowers* erect; *petals* oblong-obcordate, emarginate, one third greater than the obcordate, often purplish calyx-segments. *Stigma* clavate, attenuate to the style. *Capsules* glabrous, even when young.

(Chili; Valdivia); Patagon., Golfo de San Jorge; W. Patagon.

7. E. LECHLERI Ph. & Hauss.

Rhizome large, creeping, rooting at the nodes, with aerial stolons. *Stem* ascending, flexuose, terete, with decurrent lines; puberous above. *Leaves* opposite, slightly connected at the broad base, hairy, pointed, toothed, 3–4 cm. by 1.5–2 cm. *Inflorescence* long. *Flower-buds* glabrous. *Sepals* lanceolate, hairy. *Petals* pale, larger. *Capsule* thick, straight. (Leaves as *E. chilense*, but not basi-cordate.)

(Chili); Magellan; S. Patagon., by Rio Chico.

E. LECHLERI ANTARCTICUM.

More *slender*, with narrower, oblong-elliptical *leaves;* and more slender capsules.

Fuegia, at Orange Harbor.

8. Epilobium magellanicum Ph. & Hauss. (*E. tetragonum* Har. non L.)

Subligneous, with varying size of root, producing soboles which bear subterranean gemmæ as large as hazel-nuts. *Stem* short, 20 cm. long, with elevated lines, branching from the base; the branches all floriferous. *Leaves* small, opposite, except the upper, united at base, ovate, hairy, denticulate, 15 by 8 mm. *Flowers* small, erect. *Sepals* ovate-lanceolate. *Petals* pink, slightly larger. *Stigma* clavate, 1 mm. long. *Capsule* erect, short, 4 cm. long, thick.

S. Patagon., Punta Arenas; by Rio Sta. Cruz; Fuegia, Ushuaia.

9. E. palustre Linn. Marsh Willow-herb.

Erect, slender, subsimple, 30 cm. *Leaves* mostly opposite, lance-oblong, obtuse, 3–4 cm. long, suberect, veined. (Veins, stems and some leaves generally maroon.) *Flowers* in upper axils, few, pink to white. *Stigma* subentire. *Fruiting* peduncles slender, erect; *capsules* 4–5 cm. long, 1 mm. thick.

(Eurasia; Arctic and Mountains of Amer.); S. Patagon., head of Rio Chico, by Hatcher, Feb. 9, 1897.

10. E. tetragonum Linn.

Stem tetragonal, subglabrous, its basal branches horizontal. *Leaves* lance-oblong, denticulate; the lowest opposite, sessile and basi-obtuse. *Stigma* undivided.

(Eurasia; Andes); Fuegia; Falklands. "Common at Magellan." (C. Gay.)

J. D. Hooker identifies this with the *E. coloratum* Muhl. of U. S. (fig. in Britt. & Br., ii, p. 484). *E. alpinum* (Britt. & Br., *l. c.*, p. 482) and *E. tetragonum*, with many intermediate states, are in Tasmania. "*E. alpinum* of Chili cannot be distinguished from either the British or the Tasmanian plant."

Haussknecht gives *E. adnatum* Griseb. as the S. American representative of the Old-World *E. tetragonum* Linn., of the division with undivided stigma. This section includes besides *E. tetragonum* and *E. adnatum*, *E. brasiliense* Hauss. of Brazil and Argent., *E. puberulum* Hook. & Arn. of Chile, Chiloe and Valdivia, *E. denticulatum* Ruiz. & Pav. of Argent., *E. andicolum* Hauss. of Argent., and *E. australe.*

EPILOBIUM TETRAGONUM ANTARCTICUM Hook. f. (*E. antarcticum* O. Ktze.)

Stem ascending, mostly from a procumbent base; pubescent at the angles. *Leaves* broader, ovate, and thicker.

Fuegia; Patagonia.

11. E. VALDIVIENSE Haussk.

Tall (30–60 cm.), erect, glabrous below. *Rhizome* short, fibrilliferous, sending out large globose hypogæous gemmæ. *Stems* with decurrent, hairy leaf-traces. *Leaves* (except the uppermost) opposite, not connate at base, ovate-lanceolate, obtuse, basally rounded, denticulate, nervous; varying much. *Flowers* small; *petals* pale pink, slightly exceeding the hairy *sepals*. *Capsules* slender, 2–3 cm. long, hairy.

Valdivia.

E. VALDIVIENSE ALBOFFII.

Leaves larger, 4 cm. by 15 mm., some obtuse.

Fuegia, at Ushuaia. (Alboff.)

(*E. glabellum* Forst. is a New Zealand form; and *E. junceum* Sol. is Australasian and N. Zealand; "neither occurs in S. Amer., though S. American plants are sometimes erroneously referred to them." Haussknecht.)

3. GODETIA Spach.

Herbs or bushes, with large red or white *flowers* in leafy racemes or spikes. Flowers regular; the floral tube long-cylindrical, with a hairy *crown*. *Stamens* 8, unequal; *filaments* short; *anthers* basifixed, bent outwards after shedding the pollen. *Stigma* 4-parted, with short lobes.

Species 20, in W. Amer., some cultivated for the flowers.

G. TENELLA Cav. (by O. Ktze. sub *Œnothera*, *G. cavanillesii* Spach.).

Stem simple, strict. *Leaves* linear-spatulate. *Petals* obovate, obtuse, violaceous. *Style* longer than the erect stamens, but much shorter than the petals. *Stigmas* obovate. *Capsule* 4-angled, tomentose, longer than the bract.

(Chili); Chubut, in mountain meadows near Carren-leofú.

4. ŒNOTHERA Spach. (Excluding *Onagra* Tourn.)

Usually herbs, with prostrate or erect *stems* and alternate, sinuate or pinnatifid *leaves*. *Flowers* yellow, axillary or in terminal spikes, opening by night. *Calyx-tube* elongated above the ovary. *Stamens* 8. *Ovary* 4-celled; *ovules* many, in 2 rows. *Seeds* crowned by a tubercle, not angled, ascending.

Species 20, many of them in N. Amer., especially westwards; and by Mex. to S. Am. An outlier in S. Africa, China and Tasmania.

Key to the Species.

A. Leaves narrow-linear.	
b. Leaves obtuse, subentire, margin puberulent. Suberect.	*chilensis.*
b2. Leaves acute, entire or toothed, glabrous, the floral leaves broader.	*magellanica.*
A2. Basal leaves linear, acute, floral leaves broader. Stem above, calyx and ovary villous. Petals large.	*ibari.*
A3. Leaves linear or broader, repand-toothed, acute, silky. Panicle of large yellow flowers, turning to red.	*mollissima.*
A4. Leaves linear-spatulate. Annual with small violet flowers and tomentose fruit.	*tenella.*
A5. Leaves linear-lanceolate, denticulate-undulate. Flowers yellow.	
b. Flowers small. Capsule obsoletely 8-angled.	*australis.*
b2. Flowers larger, turning purplish. Fruit thick, cylindrical, villous.	*odorata.*
b3. Leaves basi-attenuate, rather hirsute.	*mendocinensis.*
A6. Leaves spatulate-lanceolate to ovate, coarsely or remotely toothed. Stem, branches and calyx hirsute.	*stricta.*
A7. Leaves ovate, remotely toothed. Flowers small, solitary in axils, minute annual.	*pygmæa.*

1. ŒNOTHERA AUSTRALIS Salisb.

Caudex biennial or perennial; branches annual. Leaves linear-lanceolate, denticulate, minutely pubescent, undulate. *Flowers* small. *Calyx-tube* 9 mm. long; sepals 6 mm.; *petals* 7 mm. *Capsule* 10 mm. cylindrical, obsoletely 8-angled, sessile.

Magellan, Patagon., near Puerto Deseado; by mouth of Rio Negro.

2. Œ. CHILENSIS (Brt.), Dietr.

Stem virgate, suberect, puberulous. *Leaves* narrow-linear, obtuse, subentire, marginally puberulous. *Capsule* slender. *Stigma* undivided.

(Chili); N. and S. Patagon., by Neuquen and Limay Rivers; Chubut.

3. Œ. IBARI Phil.

Biennial or perennial, often multicauline. *Stem* 50 cm., erect, pubescent, villous above. *Leaves* puberulous becoming glabrate, acute. *Basal leaves* linear, often numerous and sometimes toothed. *Floral leaves* ovate-lanceolate. *Calyx* and *ovary* villous; calyx-tube scarcely exceeding the ovary, sepals much longer. *Petals* large.

S. Patagon., at Lago Sta. Cruz.

4. ŒNOTHERA MAGELLANICA Phil.

Stem erect, 25–40 cm. high, glabrous at least upwards. *Leaves* narrow-linear to 7 cm. long, entire or remotely toothed, glabrous. *Floral leaves* broader; all acute. *Ovary* and *calyx* with soft, white, appressed hairs. *Calyx-tube* slightly exceeding the ovary; sepals shorter; *petals* as long.

S. Patagon., by Lago Sta. Cruz; central mountains of Chubut.

5. Œ. MAGELLANICA CHUBUTENSIS.

Leaves nearly all radical, linear-lanceolate, 7 cm. by 7 mm., attenuate both ways, remotely toothed. *Stem* slender, almost leafless, under 20 cm. high. *Flowers* few in an apical spike. *Fruit* glabrous.

Patagon.; mountains of Chubut.

6. Œ. MENDOCINENSIS Gill.

Annual, pubescent hirsute. *Stem* erect. *Leaves* linear, acute, unequally or wavy-toothed. *Stamens* erect, equalling the petals and the erect calyx; *stigma* with short terete lobes. *Flowers* small, yellow. *Fruit* long-cylindraceous, hirsute, sulcate, shorter than the leaf.

(Chili; Andez of Mendoza); N. Patagon. (?).

"Applied to wounds; Balsamo (Spanish), Inulei (Indian)." (J. Ball.)

7. Œ. MOLLISSIMA Linn. (*Œ. nocturna* W.)

Slender, erect, light green, more or less silky. *Stem* and branches leafy. *Leaves* linear or broader, 4–15 cm. long, sessile, repand-dentate, acute. *Panicle* of large yellow flowers, turning to red. *Petals* obovate. *Capsule* linear, 4 cm. by 3 mm.

(Chili and Argent.); N. Patagon, by Rio Negro, and Lago Nahuelhuapi. S. Patagon., Killik Aike. (Barnum Brown, Jan. 10, 1900.)

8. Œ. ODORATA Jacq.

Pubescent, suffruticose, branching. (Varying villous to glabrous.) *Leaves* linear-lanceolate, subdentate, wavy-crisp. *Ovary* as long as the corolla. *Sepals* dorsally clawed. *Petals* obcordate, entire, yellow, becoming purple. *Stigma* and *fruit* thick, long, cylindrical, villous.

N. Patagon., by Rio Negro.

9. ŒNOTHERA PYGMÆA Speg.

Minute annual, pubescent to glabrous. *Leaves* sessile, ovate, subobtuse, remotely toothed. *Flowers* small, axillary, sessile, solitary. *Petals* whitish-pink, 2-lobed. Stamens 4. *Ovary* tetragonal, rather 1-celled.

S. Patagon., along Rio Chico.

10. Œ. STRICTA Ledeb.

Stem and branches erect, hirsute, as the calyx. *Leaves* coarsely-toothed, or remotely denticulate, acute, subglabrous; the *lower leaves* narrow spatulate-lanceolate, to ovate, or linear-lanceolate. Allied to *Œ. biennis.*

Patagon., by Rivers Gallegos, Neuquen and Limay; W. Patagon. in upper valley of R. Aysen. (Dusén.)

11. Œ. TENELLA Cav.

Annual. *Stem* simple, strict. *Leaves* linear-spatulate. *Flowers* small. *Petals* obovate, obtuse, violet. *Style* longer than the erect stamens and much shorter than the petals. *Stigmas* obovate, short. *Capsule* cylindrical, tetragonal, tomentose, exceeding the bract.

(Chili); N. Patagon., by Lago Nahuel-huapi.

5. CHAMISSONIA Linn.

As *Œnothera*, but with capitate *stigma*, short campanulate *calyx-tube*, and 1-seriate *seeds*. *Stamens* unequal. *Capsule* sessile, linear or attenuate upwards, mostly compressed and slightly twisted.

Soft herbs or low weeds with small leaves. (Fig. of flower in Eng. & Prantl, iii, 7, p. 216, B. C.)

C. TENUIFOLIA (Spach. sub *Sphærostigma*).

Stems virgate, suberect, puberulous. *Leaves* narrowly linear, obtuse, subentire, sometimes puberulous at margin. *Petals* obovate, subentire, much shorter than the ovary, thrice as long as the longer stamens. *Capsules* very slender.

(Chili); Patagon., near mouth of Rio Chubut at Rawson. (Dusén.)

6. FUCHSIA Plum.

Fruticose, with long-peduncled, axillary, nodding *flowers*, pink to purplish or white. *Petals* 4, sessile, rarely wanting. *Stamens* 8. *Ovary* 4-celled, many-seeded, becoming an edible *berry*.

Species 60, chiefly in Mexico, and W. South Amer.; few in New Zeal. Much cultivated in gardens for their beauty.

1. F. COCCINEA Ait.

Differs from *F. magellanica* by having only a cup-like lower part of the calyx-tube. (O. Ktze.)

Fuegia.

F. COCCINEA ROBUSTIOR.

Upper leaves sessile and petioles short.

Near Magellan.

2. F. MAGELLANICA Lam. (*F. macrostema* Ruiz. & Pav.)

Branches glabrous. *Leaves* opposite or 3-verticillate, ovate, acute, denticulate, short-petiolate. *Peduncles* axillary, longer than the nodding flowers. *Calyx* tubular below, its lobes oblong, acute, twice as long as the spreading blue obovate *petals*. *Stigma* 4-lobed.

(Chili); Patagon., by Lago Nahuel-huapi; Magellan; Fuegia; Dawson I.; Staaten I.

"In swamps"; much in gardens; "moist lugare" of the Fuegians.

Family 79. HALORAGIDACEÆ. Water-milfoil Family.

Chiefly aquatic herbs, with alternate or whorled *leaves*, if submerged often pectinate-pinnatifid. *Flowers* small, perfect or diclinous. *Calyx-tube* adnate to the ovary, its limbs entire or 2–4-lobed. *Petals* 2–4 or none. *Ovary* 2–8-ribbed or winged. *Styles* 1–4. *Nutlet* or drupe, consisting of 2–4, one-seeded *carpels*.

Species 100, widely distributed.

KEY TO THE GENERA.

A. Aquatic plants with alternate or whorled leaves, the submersed being dissected into capillary segments. Flowers small, monœcious; carpels and seeds mostly 4 (or 2), styles 4; stamens 4–8. 1. *Myriophyllum*, p. 616.

*A*2. Land plants with broad leaves and mostly diœcious spiked 2-merous flowers. Carpels 2, styles 2, but seed 1, stamens 1–8. 2. *Gunnera*, p. 617.

*A*3. Aquatic plants with whorled narrow leaves and polygamous, 1-merous flowers. Carpel 1, style 1, seed 1, stamen 1. 3. *Hippuris*, p. 618.

1. MYRIOPHYLLUM Linn.

The submersed *leaves* divided into capillary segments; emersed leaves, if any, less divided. *Flowers* axillary, 2-bracted, usually monœcious, the males above; sometimes diœcious; 2–4-merous and diplostemonous. *Ovary* 2–4-celled; cells 1-ovuled. *Styles* 4. *Fruit* splitting into 4 mericarps.

Species 20, extra-tropically cosmopolitan. (Fig. in Eng. & Prantl, iii, 7, p. 234.)

1. M. ELATINOIDES Gaud.

Monœcious or *diœcious*. *Leaves* 3–5-whorled, the lower capillaceo-multifid; the upper shorter, lanceolate to ovate or broad-oblong, occasionally opposite, entire or dentate, or pinnatifid, obtuse, sessile. *Carpels* rather short, broad-oblong, dorsally convex, glabrous.

(Australia and New Zeal.); Falklands, in freshwater lagoons and running streams, abundant. Magellan (R. O. Cunningham); S. Patagon.; Rio Chico; N. and E. Fuegia.

2. M. PROSERPINACOIDES Gill.

Diœcious. *Leaves* all submersed, similarly pectinate-pinnatifid, 4–5-whorled; their segments 20–25. Pistillate *flowers* axillary, apetalous; *stigmas* 4, plumose. Young *carpels* glabrous. Hair-like *bracts* among the leaves.

(Chili; naturalized in parts of N. J., U. S.); N. Patagon.

3. M. SPICATUM Linn.

Submerged leaves whorled and dissected. *Floral leaves* ovate, entire or serrate, shorter than the flowers, or none. *Spike* about 5 cm. long, like a leafless interrupted spike. *Carpels* rounded on the back.

(Eurasia and N. Amer.); S. Patagon.; Valley of Sta. Cruz, by Hatcher. Near the base of the stem many of the submersed leaves are opposite and undivided, linear-acute, 5-nerved; some of these sending lacinia out from their margins; and many of them are closely covered with Diatoms.

4. MYRIOPHYLLUM TERNATUM Gaudich. (Var. of *M. elatinoides?*)

Monœcious. *Leaves* ternate, the lower deeply pinnatifid, with *capillary laciniæ*, the upper undivided, oblong, entire. Upper flowers male; lower pistillate.

(Chili); S. Patagon.; Rio Chico; Fuegia; Falklands.

5. M. VERTICILLATUM Linn.

Monœcious. Submersed leaves in whorls of 3 and 4; dissected into very fine capillary divisions. *Floral leaves* pectinately divided, much exceeding the flowers. *Petals* of the male flowers purplish.

(Eurasia and N. Amer.); Fuegia.

2. GUNNERA Linn.

Scapigerous perennials, with creeping *rhizome* and mostly radical, alternate, petiolate, broad *leaves*, and spiked to panicled, hermaphrodite or unisexual *flowers*. *Calyx-tube* ovoid or compressed, its lobes 2–3, or often in the male flowers none. *Petals* none or 2, cucullate. *Stamens* 1–2. *Ovary* 1-celled, with 1 pendulous *ovule*. *Fruit* a coriaceous or fleshy *drupe*. *Embryo* minute, remote from the hilum, and inverted.

Species 17, characteristic of the regions from Chili to Tasmania and New Zeal.; also in Fernandez, New Granada, Brazil, Hawaii, S. Africa and Java. (Not reported from Australia.)

1. G. CHILENSIS Lam.

Leaves orbicular-reniform, 5–13-lobed, lobes ovate-acute, irregularly toothed, petioles scabrous, hairy above, pilose on the nerves underneath. *Stipules* numerous in the leaf-axils. *Scape* usually shorter than the leaves. *Spikelets* approximate. *Calyx* 2-toothed.

Perennial in humid places from Caraccas (Lat. 10° N.) by the Andes to Chili and Magellan. Sometimes to 2 meters high, and cultivated; "amongst the largest of Dicotyledonous vegetables." (J. D. Hooker.) Often with colonies of *Nostoc* within its stem. "The Panke somewhat resembles rhubarb on a gigantic scale. The inhabitants cut the stalks, which are subacid, tan leather from the roots, and procure a black dye from it." (C. Darwin.)

N. Patagon., mountain streams near Lago Nahuel-huapi. (Fig. in Eng. & Prantl, iii, 7, p. 235, f. 106; p. 228); W. Patagon. in valley of Rio Aysen; to Ultima Esperanza. (Dusén.)

2. GUNNERA LOBATA Hook. f.

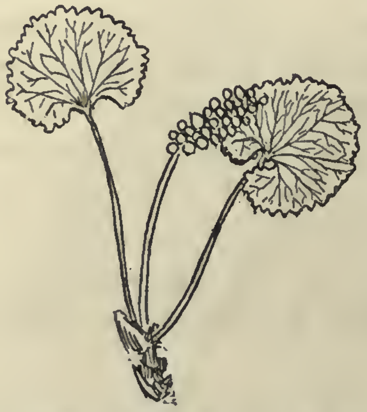
Diœcious and *apetalous.* *Stem* creeping and rooting. *Petioles* 2 cm. long, hirsute, with a basal, sheathing stipule. *Leaves* rounded, deeply 5–7-lobed, coriaceous, the nerves underneath pilose; their lobes rounded, obtuse, entire, the margins obscurely ciliate. *Scape* of male flowers equalling the petioles; *pistillate flowers* sessile. *Anthers* broad-oblong.

W. Magellan, Churucca and Puerto Angosto (Dusén); Fuegia, near Cape Horn.

3. G. MAGELLANICA Lam.

Diœcious and apetalous, low, stoloniferous herb, with long-petioled, orbicular, reniform, crenate *leaves*, glabrous on upper surface, pilose partially beneath on the nerves and the petiole. *Male scape* exceeding the leaves, the male flowers on short pedicels. *Female scape* shorter and the flowers sessile. *Calyx-lobes* lanceolate.

FIG. 77.



Gunnera magellanica. Pistillate plant in fruit, slightly reduced.

(S. Chili; Hawaii); N. Patagon., by Lago Nahuel-huapi; E. and W. Magellan; Fuegia, passim to Cape Horn; Staaten Is.; Falklands. (By Hatcher at Punta Arenas, and from Cordilleras of S. Patagon., in fruit March, 1897; of densely spicate, crimson drupelets.

"Most abundant of Antarctic American plants from Valdivia to Cape Horn, and especially at the Falkland Is., where it is eaten by cattle." (J. D. Hooker.) "Common in the forest-region and by streams and the sea-coast." (Dusén.) Fuegian name, "Palakoazirh."

3. HIPPURIS Linn. Mare's-tail.

Aquatic herbs with simple erect *stems*, and whorled, entire *leaves.* *Flowers* axillary, small, usually perfect, but apetalous. *Calyx-limb* minute. *Stamen* 1. *Style* filiform. *Achene* oblong.

Species 3, N. Temperate Zone, and Arctic, also in Patagonia. *H. alata* Jacq. is found in Fernandez, Australia and New Zealand.

H. VULGARIS Linn.

Leaves in whorls of 5–12, linear or broader, sessile, acute, the upper spreading, the lower deflexed.

(Eurasia and N. Amer.); S. Patagon., by Rio Chico; Magellan; N. and E. Fuegia.

HIPPURIS VULGARIS FLUVIATILIS Hoffm.

Leaves longer, membranaceous. In rather *deep watery places*, from which the sterile plant rarely emerges. Perennial. N. Fuegia. (Dusén.)

Family 80. ARALIACEÆ. Ginseng Family.

Herbs or woody plants, with superior, 5-merous *flowers*, often in umbels. *Calyx-tube* adnate to the ovary, supporting the petals and isomerous *stamens*. *Ovary* 1 to several-celled, with as many *styles*. Cells 1-seeded. *Fruit* a berry or drupe. *Endosperm* large.

Species 450, in temperate and tropical countries.

PSEUDOPANAX K. Koch.

Glabrous trees or shrubs, with digitate and simple *leaves* on the same plant, or all simple. *Flowers* in compound umbels or racemes. *Pedicels* jointed under the flowers. *Ovary* 5-celled. *Fruit* fleshy, enclosing *pyrenes*.

Species 6, Chili and New Zealand, and the following:

P. LÆTEVIRENS Gay.

Umbels panicled. *Leaves* 5-digitate, their *leaflets* long-lanceolate, finely serrate.

W. Magellan, and Northwards; at Lago Nahuel-huapi.

Family 81. UMBELLIFERÆ. Carrot Family.

Herbs with small, epigynous, 5-merous *flowers* in compound, or rarely simple *umbels*. *Umbels* and their umbellules mostly with *involucres* and *involucels*. *Calyx-tube* wholly adhering to the ovary and supporting the petals; *calyx-limb* represented by 5 minute teeth or obsolete. *Ovary* 2-celled, surrounded by a disk (stylopodium), whence arise the 5 *stamens* and the 2 *styles*. *Ovules* 1 in each cell, *pendulous* from the septal carpophore. *Pericarp* with ribs, wings and oil-tubes. *Embryo* minute, in large *endosperm*.

Species 1,600, cosmopolitan, abounding in the tropics.

KEY TO THE GENERA.

(Be careful to secure the fruit.)

A. Fruit having woody fibrous endocarp. No free carpophore. No oil-tubes at least in the furrows. Umbels usually simple.

b. Fruit with very narrow commissures and 5 primary ribs. Leaves round-peltate or cordate. 1. *Hydrocotyle*, p. 622.

b2. Fruit with broad commissures, and mericarps dorsally flattened or rounded.

c. Fruit wingless, with sac-like hollows under the midrib; ribs often glochidiate-ciliate. Seeds thick, lens-shaped. Herbs with often cordate-palmately divided leaves and stellate-hairs; the lower leaves opposite, stipulate. 2. *Bowlesia*, p. 623.

c2. Fruit wingless; without sac-like hollows; transversely oval or circular or rounded-quadrangular. Fruit dry, more or less dorsally compressed, with 3-dorsal ribs. Calyx-teeth minute, 1-nerved. Cespitose, with leaves in rosettes or closely imbricate. 3. *Azorella*, p. 624.

c3. Fruit broadly and dorsally 4-winged. Mericarps peltate, with small, linear commissures. Petals lance-oval.

d. Calyx not large, its teeth prominent. Petals with midribs inflexed, notched, and dorsal callosity. Glabrous herbs, little branching, with palmately cut leaves. 4. *Asteriscium*, p. 632.

d2. Calyx large, with 5 lanceolate teeth. Petals lanceolate, pointed or slightly notched. Undershrubs of sparing growth, leaves 3–5-partite, sheathing the branches. 5. *Mulinum*, p. 633.

A2. Fruit subglobose, muricate; vittæ 5. Leaves palmately 5–3-partite, the parts tripartite, etc. 6. *Sanicula*, p. 635.

A3. Fruit walls of weak parenchyme; the fruit nearly ovoid somewhat flattened laterally, oil tubes usually 5, weak or obsolete, flowers in dense head-like umbels, with pointed bracts. Leaves often toothed or lobed, with bristly margins. 7. *Eryngium*, p. 636.

A4. Fruit walls consisting of weak parenchyme: sometimes with woody layers. Styles arising from a stylopodium. Oil-tubes arising in the furrows of the young fruit (valleculæ), often afterwards specialized. Umbels mostly compound, with a general involucre of bracts, and a special involucel of bracteoles.

b. Primary ribs weak or strong, with lateral ribs or with wings. The valleculæ are marked only by the oil-tubes.

c. Seeds deeply-grooved or hollow on the commissure (by the decay of the raphe).

d. Crystal-glands in the parenchyme surrounding the carpophore. Flowers polygamous. Fruit ribbed, with very small oil-tubes; clavate, spurred basewards. Calyx-teeth none. Leaves decompound. Umbels few-rayed; bracts and bracteoles narrow or none. 8. *Osmorrhiza* (*Washingtonia*), p. 637.

d2. Crystal glands none. Fruit subglobular.

e. Fruit nut-like, with woody layers; smooth, showing ribs and oil-tubes only on drying. Commissure flat, not much narrowed. 9. *Coriandrum*, p. 638.

e2. Fruiting mericarps hanging by small commissures; externally ovoid-urceolate. Chief ribs weak or strong.

f. Umbels simple, many-flowered. Frond long-ovoid, narrowing upwards. Petals flat, not apically inflexed. Peduncles short and thick. 10. *Oreomyrrhis*, p. 638.

f2. Umbels compound, many-rayed. Fruit didymous; commissure broad; ribs wavy. Carpophore short, thick. Style recurved. Petals obcordate, with strong, reflexed point. Oil-tubes obsolete. 11. *Conium*, p. 639.

c2. Seeds flat on the commissures; raphe often protruding, rarely receding.

  d. Lateral ribs and 3 dorsal ribs subsimilar. Seeds semi-circular in cross-section, with broad endosperm.

    e. Ribs of fruit slightly protruding. Mericarps hanging together by a narrow commissure. Only vallecular oil-tubes, or none. No crystal-glands in pericarp. Lower leaves divided, sheathing-petioled. Flowers white.

      f. Mericarps with 5 equal ribs; oil-tubes vallecular, or more or none. Calyx teeth none or minute. Petals ovate-acute, entire, apex sometimes inflexed. Leaves pinnate, or further cut. Involucres varying.
      12. *Apium*, p. 639.

      f2. Fruit long oval or mericarps cylindro-concave, smooth. Oil-tubes one in each furrow. Petals clawed, cleft, the lobes unequal, apex sessile in the deep notch. Terminal and lateral umbels. Calyx-teeth obsolete; styles short. Bracts and bracteoles pinnate.
      13. *Ammi*, p. 641.

      f3. Fruit cordate-ovoid to didymous or shorter. Oil-tubes many, fine. Calyx-teeth long, persisting. Petals apically inflexed. Styles short. Leafy-stemmed marsh-plants. Bracts and bracteoles many, small, persistent. Leaves mostly once-pinnate. 14. *Sium*, p. 641.

    e2. Ribs of fruit strong, and often wing-like; the side-ribs broadening the commissural face of the mericarps; the carinal and sutural ribs subequal.

      f. Fruit short-ovoid or obconic. Stylopodium broad, obtuse. Marginal ribs thick and broad, not winged. Mericarps dorsally broad-round, not compressed, smooth. Oil-tubes 1 in each furrow. Carpophore obsolete. Creeping plants with simple umbels and terete leaves. Flowers white.
      15. *Lilæopsis* (*Crantzia*), p. 641.

      f2. Fruit ovoid-cylindrical, dorsally compressed, smooth. Mericarps sometimes with small wings. Lateral ribs imbricating, strong; the other ribs mostly small. Oil-tubes 4 vallecular, 2 commissural, large. Flowers green-yellow. 16. *Fœniculum*, p. 642.

      f3. Fruit ovoid-cylindrical, not dorsally compressed, smooth. Ribs subequal, all broad-winged. Seeds with broad, often pentagonal cross-section. Petals obcordate, notched, whitish. Calyx teeth none or minute. Several vallecular oil-tubes or minute. Leaves ternately compound. Bracts and bracteoles several, narrow, some divided.
      17. *Ligusticum*, p. 642.

    e3. Side-ribs of fruit much broader than the 3, often slight, dorsal ribs; forming small double wing-like processes of the paired mericarps. Seeds small in cross-section. Bracts and bracteoles mostly none. Leaves pinnate. Flowers yellow. 18. *Pastinaca*, p. 642.

b2. Secondary ribs over the oil-tubes, usually exceeding the primary ribs and armed by barbless or barbed spines. Bracts pinnate; bracteoles entire or toothed. Flowers chiefly white. Leaves pinnately decompound. 19. *Daucus*, p. 643.

1. HYDROCOTYLE Linn.

Prostrate *marsh herbs*, with palmately nerved or lobed or peltate *leaves*, mostly broad, on long petioles, with scale-like *stipules;* and small, white *flowers* in simple, sessile or peduncled *umbels*, with a small *involucre.*

Species 100, cosmopolitan. (Fig. in Eng. & Prantl, iii, 8, p. 117.)

KEY TO THE SPECIES.

A. Leaves peltate.	
b. Leaves orbicular.	
c. Umbel 20–30-flowered.	*umbellata.*
c2. Scape umbelled and flowers whorled along its branches.	*bonariensis.*
b2. Leaves subreniform. Rays many.	*modesta.*
A2. Leaves subpeltate, nearly single at the nodes. Umbels 3–5-flowered.	*batrachioides.*
A3. Leaves not peltate.	
b. Leaves round-cordate, 7-lobed. Flowers about 25.	*araucana.*
b2. Leaves round-reniform, 5-lobed. Umbels 5–12-flowered.	*ranunculoides.*
b3. Leaves reniform. Umbel 10–12-flowered.	*bonplandi.*

1. H. ARAUCANA Phil.

Stem erect, simple, slender, few-leaved, covered with long hairs; as are the petioles, etc. *Leaves* glabrous, orbicular, cordate, 7-lobed, crenate. *Peduncles* shorter than petioles; *flowers* 25, subsessile. Fruit small. Araucaria and Valdivia.

H. ARAUCANA PATAGONICA Speg.

Stems creeping; and all the plant glabrous.

2. H. BATRACHIOIDES DC.

Glabrous. *Leaves* nearly single at the rooting nodes, long-petioled, erect, subpeltate, 3–5-partite, the parts cuneate, obtuse, 2–4-cleft; *lobes* entire or subcrenate. *Peduncles* scarcely 25 mm. long, deflexed in fruit. *Umbels* 3–5-flowered. *Flowers* subsessile.

(Chili); N. Patagon., by Rio Negro.

3. H. BONARIENSIS Lam. (*H. umbellata bonariensis.*)

Glabrous. *Leaves* peltate, orbiculate, 15–20-nerved, bicrenate. *Scape* scarcely longer than the petioles, apically umbelled and further branching. *Flowers* whorled along the branches.

(Argentina); N. Patagon., by Rio Negro, along damp maritime regions. Multiform.

4. HYDROCOTYLE BONPLANDI Rich.

Hirsute. *Leaves* reniform (not peltate), 9-nerved, bicrenate. *Peduncles* 25 mm. long, equalling the petioles. *Umbel* 10–12-flowered, the flowers pediceled.

(Chili); Patagon., by Rio Negro and Rio Sta. Cruz.

H. BONPLANDI CHILENSIS.

Umbels denser, subsessile. *Leaves* 7-nerved, 7-lobed; petioles 35 mm.

(Chili); Patagon., Rivers Negro and Sta. Cruz.

5. H. MODESTA Cham. and Schl.

Leaves peltate, very long-petioled (7–30 cm.) subreniform-orbicular, glabrous, 9-nerved, petioles and young stems pilose. *Peduncles* short (6–25 mm.), many-rayed. Fruit very small, emarginate at both ends.

(Montevideo); N. Patagon., by Rio Negro.

6. H. RANUNCULOIDES Linn. f.

Stout, glabrous. *Stem* floating or creeping near the shore. *Leaves* orbiculate-reniform (not peltate), 5-nerved, somewhat 5-lobed; the lobes obtuse, subcrenate, mid-lobe longest and narrowest. *Peduncles* shorter than the petioles. *Umbel* 5–12-flowered, the flowers pediceled. *Fruit* broad-orbicular.

(Mediterr. Region; N. Amer.; by Mex. to S. Amer.); N. Patagon., by Rio Negro, S. Patagon., by Rio Sta. Cruz.

7. H. UMBELLATA Linn.

Glabrous, subterranean branches tuberiferous. *Leaves* peltate, orbicular, basi-emarginate, bicrenate, about 11–12-nerved. *Scape* shorter than the petioles. *Umbel* 20–30-flowered; the flowers petioled. *Fruit* broader than long, notched at both ends.

(S. Africa; N. Amer. and W. Indies; Mex. to S. Amer.); N. Patagon.

2. BOWLESIA Ruiz & Pav.

Stellate-hairy or glabrous herbs. *Leaves* alternate below, but mostly opposite under the simple or irregularly compound *umbels*. *Bracts* small, subulate or none. *Calyx-teeth* prominent. *Petals* entire, white or purplish. *Fruit* constricted, with narrow commissure. *Mericarps* subtriangular, glochidiate-ciliate, the cilia united at base to form a wing.

Species 18, Calif. to Chili, etc.

(Fig. of fruit in Eng. & Prantl, iii, 8, p. 125.)

1. BOWLESIA INCANA R. & P.

Procumbent annual, stellate-hairy. *Leaves* reniform-orbicular, obtusely 3–5-cleft; their lobes entire or 3-toothed. *Umbels* on very short axillary peduncles.

(Peruvian mountains, Argentina.) Patagon.

B. INCANA TENERA (Spreng.) Urban.

Prostrate, with reniform, ciliate *leaves*, 5–7-lobed. *Umbels* 3-flowered.

(S. Brazil); Patagon., near mouth of Rio Chubut (Dusén); by Golfo de San Jorge; Rio Sta. Cruz; by Rio Negro.

2. B. TROPEOLIFOLIA Gill. & Hook.

Stellately hairy. Stem procumbent, slender. Leaves palmately 5–7-parted, the segments lanceolate, obtuse, entire, with acute sinuses. Peduncles long, 3-flowered. Fruit small.

(Argentina.)

B. TROPEOLIFOLIA HETEROPHYLLA Speg.

Procumbent or climbing annual with long green branches, very long internodes and petioles; the *leaf-blades* ovate, entire or 3-lobed or palmatifid, sparingly stellate-hairy and with small stipules. *Flowers* small, white-green, sessile on long peduncles, 3–5 capitulate. *Fruit* dorsally compressed, green.

S. Patagon., in meadows at Karr-aike, near Lago Argentino.

B. TROPEOLIFOLIA PATAGONICA Speg.

Low, slender, erect or diffuse, more or less stellately *hoary;* the last *leaves* of the branches very lanceolate, short-petioled, usually entire.

Chubut, along Carren-leofú.

3. AZORELLA Lam. (*Bolax* Comm.)

Perennial herbs or undershrubs, sometimes densely pulvinate (so forming a cushion), much branching, rarely stoloniferous, and covered by imbricating *leaves*, sometimes covered by the long leaf-sheaths, often cespitose with radical leaves.

Leaves entire or toothed, or ternately or palmately dissected. *Stipules* none, or like cilia, or scarious. *Umbels* sessile amid the leaves or peduncled, simple, or irregularly compound, many- or few- or only 1-flowered. *Involucral bracts* small and free, or large and connate, or radiant. *Petals* somewhat concave, entire, imbricate. *Calyx-teeth* evident. *Fruit* laterally compressed or not; furrowed, or constricted at the commissure. *Carpels* subterete, or pentagonal, rarely dorsally flattened. *Primary ridges* subequal; the lateral distinct from the commissure. *Vittæ* between the ridges more or less conspicuous. *Seed* straight, subterete.

Species 35, in Andesia and Antarctic Amer., Austral., Tasmania and N. Zeal.; reaching Mexico.

Generic Subsections.

1. *Fragosa.* Stems pulvinate or covered by imbricating leaves, or divided into long branches covered by leaf-sheaths. Leaves naked at the base or ciliate. Small plants; disk large, lobed; oil-sacs of fruit large, often brown; as *aretioides*, *cæspitosa*, *selago.*
2. *Pozoa.* (Separate genus in Eng. & Prantl, not found in Patagon.) Leaves subradical, with long dilated petioles. Umbels many-flowered, simple — *hydrocotylifolia.*
3. *Microsciadium.* (Austral.) Cespitose. Umbels few-flowered. Bracts few, small.
4. *Schizeilema.* Cespitose, stoloniferous; like *Hydrocotyle;* leaves in rosettes or scattered, not imbricated; umbels stalked; involucral bracts numerous — *ranunculus.*
5. *Huanaca.* Low, with radical rosettes of long-petioled leaves, whole or lobed or partite. Flowers on long pedicels, in many-rayed umbels with an involucre of leaves; as *acaulis.*
6. *Pectophytum.* Cespitose closely leaved, with old stems surrounded by sheaths of old leaves. Terminal umbels amid the upper leaves; each pedicel swollen below the ovary and articulated; as *glebaria*, *lycopodioides*, *nivalis*, *trifurcata.*

Key to the Species.

A. Long-petioled leaves from the ground.
  b. Scape-like stem trifid at top, 2-leaved, all the leaves and the involucre with filiform segments. Umble with long rays. *acaulis.*
  b2. Leaves reniform-peltate. Scapes 1–7, long; umbels capituliform; involucre of 1 broad leaf, toothed. *hydrocotylifolia.*
  b3. Stem creeping and rooting. Leaves rounded and divided. Peduncles short; umbel 3–5-flowered; involucral bracts linear. *ranunculus.*
A2. Stem short. Leaves palmately 3–5-parted. Umbel 20-flowered; involucral bracts lanceolate. *morenonis.*

A3. Cæspitose, with entire leaves; many form cushions.
  b. Leaves scale-like, with slender petioles from an enlarged base. Umbels of 1–6 small flowers. White-silvery. *ameghinoi.*
  b2. Leaves fleshy, ovate, concave. Umbels sessile, few-flowered. *bovei.*
  b3. Leaves linear, the wide sheaths filamentous. Umbels sessile, 6–8-flowered. *cæspitosa.*

*b*4. Leaves narrow, from broad, ciliate sheaths. Umbels short-stalked, 6–8-flowered. *filamentosa.*
*b*5. Leaves linear. Umbels short, sessile amid the upper leaves. *hookeriana.*
*b*6. Leaves obovate or oblanceolate, fasciculate. Umbels nearly hidden; involucre multifid, *plantaginea.*
*b*7. Leaves elliptical or oblanceolate, imbricate. Involucre 5–6-cleft. *patagonica.*
*A*4. Leaves 3–7-cleft from a broad base with cilia, imbricating. Umbel short-stalked, 3-flowered. Involucre bracts linear. Forming cushions. *selago.*
*A*5. Lower leaves with broad imbricating sheaths; upper leaves 2–3-cleft. Umbel subsessile, 6–8-flowered. Involucre cup-like, many-leaved. *bolacina.*
*A*6. Leaves 3-lobed or 3-cleft.
b. Leaves crowded, amplexicaul, pectinate; blades triangular or 3-lobed. Umbel long-stalked. *fuegiana.*
*b*2. Leaf-lobes recurved, ciliate. Umbel subsessile; involucral bracts subulate. *trifurcata.*
*b*3. Petioles soft, not marginally ciliate. Umbel simple, subsessile, 4-flowered and 4 involucral bracts. Stellate hairs on young fruit. *glebaria.*
*b*4. Leaves recurved; the sheaths broad, ciliate. Umbels and flowers stalked. Bracts 5–6. lanceolate. *utriculata.*
*b*5. Leaves suberect with pungent points and ciliate-margined, broad imbricating sheaths. Umbel stalked, of 3–4-subsessile flowers, with 2 serrate bracts. *lycopodioides.*
*A*7. Leaves 3-partite, imbricate. Umbels subsessile, 4-flowered, with 4 long bracts. *aretioides.*

1. AZORELLA ACAULIS (Cav. sub *Huanaca.* *H. cavanillesii* DC.).

Stem scape-like. *Leaves* all radical, long-petioled, palmately 7–8-sect.; the segments narrow-linear, acute, entire or trifid; petiole widened at base to a ciliated sheath. *Scape* erect, simple, striate, bearing a 3-rayed compound *umbel.* *Involucral leaves* 3-partite, basally ciliate. The 2 lateral umbellules long-peduncled and blooming longer than the subsessile mid one; *umbellules* several-flowered. Fruit ovate, dorsally flattened. *Mericarps* with 3 lateral vittæ.

Magellan, S. Patagon., at Puerto Deseado; by Hatcher at Coy Inlet, "on steppes, rare"; by Peterson at Rio Chico. (Nov.–Dec.)

"A little known Patagonian plant, remarkable for the resemblance of its almost leafless stem to a scape, and for its branching being trichotomous." (J. D. Hooker.) "Varies from 3 to 50 cm. high, and more or less laxly pilosulous." (Speg.)

2. A. AMEGHINOI Speg.

Cespitose, squamous, *silvery.* *Leaves* crowded, subimbricate, ovate or lance-linear, involute; petioles slender on an enlarged base. *Umbels* acrogenous; peduncle shorter than the petiole, white-villous, 1–6-flowered; flowers small, subglabrous.

S. Patagon., by Rio Chico and Rio Scheuen.

3. AZORELLA ARETIOIDES Willd. (*Fragosa* in H. B. & K.)

Low, cespitose. *Leaves* imbricate, tripartite, coriaceous, the lobes oblong, acutish, the petioles suberous-thick, apically villous. *Umbels* subsessile, simple, 4-flowered. *Involucral leaves* 4, oblong-lanceolate, as long as the pedicels.

The same habit as *A. selago*, whose leaves are small and not so much lobed.

(Andes of Quito at great elevations); S. Patagon., on Cordilleras, Hatcher.

4. A. BOLACINA Clos.

Densely cespitose, dwarfish. *Petioles* closely imbricated on the branches, broad-ovate, somewhat sheathing, without a lamina. *Lamina* of terminal leaves undivided or 2–3-cleft, their segments deep or dentiform, often unequal, oblong. *Umbel* subsessile, 6–8-flowered. *Involucre* cup-like, many-leaved.

(Chili); Cordilleras of S. Patagon., by Hatcher.

5. A. BOVEI Speg.

Botryoid-ramulose, glabrous, cespitose. *Dense*, thick, imbricate petioles, coriaceous below, broad-sheathing, entire; upwards abruptly becoming a fleshy, ovate, obtuse, concave *lamina*, marginally dilated. *Umbel* apical, sessile, few-flowered.

Fuegia, rather rare in peat meadows of Melville, etc., Islands.

Dusén found it forming cushions to the snowline at Puerto Angosto in W. Magellan. He believes it to be identical with *A. gummifera* Poir. (1810.)

6. A. CÆSPITOSA Cav. (Plate XXII, A.)

Densely cespitose. *Leaves* 8 mm. long, very green above, closely imbricating, wide at base, spreading, slightly reflexed, linear, acute, entire, coriaceous, their sheaths filamentous. *Umbel* sessile among the upper leaves, short, 6–8-flowered; calyx-tube pilose, its margin obtusely and very shortly 5-lobed. Young *fruit* oblong, subquadrate, dorsally flattened.

Patagon., in Cordilleras; by Hatcher at Rio Chico de Sta. Cruz; W.

Patagon.; Puerto Deseado, Magellan, Falklands. N. and E. Fuegia. (Dusén, "a characteristic steppe-plant.")

7. AZORELLA FILAMENTOSA Lam.

Lax cespitose. *Stems* branching, the branches crowded, occasionally elongate. *Leaves* linear-lanceolate, subspatulate, subcymbiform, their margins reflexed, entire, ending in an equi-long petiole which is sheathing and ciliate at base. *Umbels* short-pedunculate, 6–8-flowered. *Fruit* ovate, subterete; *mericarps* dorsally convex, 5-ridged.

Magellan, S. Patagon., at mouth of Rio Gallegos (Dusén); through Fuegia to Cape Horn; Falklands. "A steppe-plant; not very common throughout Fuegia and the Falkland Is. Gaertner saw specimens in the Banksian Herbarium with 3 carpels."

8. A. FUEGIANA Speg.

Lax, cespitose, green. *Petioles* crowded, long-slender, arcuately spreading, glabrous, basi-amplexicaul, long-pectinate-laciniate, ciliate; their *limbs* flat, triangular-cuneate, entire, truncate, 3-lobed or 3-toothed, the lobes ending in a cilium. *Umbels* long-peduncled.

Magellan, S. Patagon., Rio Gallegos; Lago Argentino; Fuegia, Gregory Bay and S. Fuegia.

9. A. GLEBARIA (Comm. sub *Bolax*) A. Gray. (*A. gummifera* Franch. non Poir, *A. cæspitosa* Vahl). Bolax.

Perennial, cespitose herb. *Leaves* imbricate, trifid, glabrous, coriaceous, the lobes ovate, obtuse; *petioles* suberose-membranaceous, not marginally ciliate. *Umbel* simple, subsessile, 4-flowered. *Involucral leaves* 4, equalling the pedicels. *Calyx-teeth* obscure. *Young fruit* stellately pubescent.

Patagon., from 41° S. southwards to Cape Horn. W. Patagon., Falklands. "Not common in the steppes, save southwards; but near the forests. It forms bolax or balsam-bogs inland, hemispherical hillocks of pale yellowish-green, so hard that one may break his knuckles on them. If the day be warm they emit a faint aromatic smell, and drops of a viscid white gum flow from them. They grow from the outward shoots, the very old ones decaying near the ground. One mass is the product of a single seed, and the result of many, perhaps hundreds of years' growth. In growing, branches radiate regularly outwards from the rooting center;

and fibrous radicles aid in nourishing the mass." (After J. D. Hooker.) Indian names in Patagonia, "Kethala" and "Gethem." The Indians use the resinous root as a masticatory, and roast and grind it into flour, taking it as food.

10. AZORELLA HOOKERIANA Clos.

Densely cespitose. *Leaves* closely imbricating, broader at the base, sheathing, spreading, subrecurved, linear, acute, entire, coriaceous. *Sheath* filamentose. Flowering *umbel* short, sessile among the upper leaves. *Calyx-tube* pilose.

Magellan, S. Fuegia, Ushuaia; San Sebastien.

11. A. HYDROCOTYLIFOLIA (Fielding & Gardn. sub *Pozoa*).

Stems nearly obsolete. *Leaves* radical, fasciculate, with long petioles, subreniform-orbicular, subpeltate, sinuose-dentate, 5-nerved. *Scapes* 1–7, twice as long as the leaves. *Involucre* large, 1-leaved, many-toothed. *Head* about as long as involucre.

(Chilian cordilleras); Patagon., Chubut, in swampy mountain meadows.

12. A. LYCOPODIOIDES Gaud.

Cespitose. *Stem* branching, densely fasciculate. *Leaves* closely imbricate, rather erect, deeply trifid, the segments subulate, pungent. *Petioles* concave, broad, sheathing. *Margins* sharply ciliate-serrate. *Umbels* 3–4-flowered; in fruit with strong peduncle. *Involucral leaflets* 2, broad-ovate, cymbiform, sharply incised-serrate. *Pedicels* very short. *Calyx-limb* 5-toothed. *Fruit* globose; *carpels* smooth, dorsally convex, without costæ.

Falklands; Fuegia; rare in the steppes; common in the mountains of the southern part of the mean-rainy forests (Dusén); W. Patagon.; S. Patagon., pampas by Coy Inlet (O. A. Peterson); Ushuaia, by Hatcher.

A. LYCOPODIOIDES COMPACTA Phil.

Leaves crowded at top of the branches and spreading. Umbel 1-flowered.

Falklands.

A. MORENONIS (= *Mulinum morenonis* Speg.).

13. A. PATAGONICA Speg.

Densely cespitose-pulvinate perennial, but not compact. *Leaves* densely imbricate, rosulate at ends of branches; their *limbs* fleshy-membranaceous, elliptical or oblanceolate, obtuse, glabrous, gradually passing into a long basally dilated *petiole*, with chaffy hairs. *Umbels* subsessile; *involucre* 5–6-cleft, 8–12-flowered; *pedicels* as long as the fruit.

Patagonia, rare in basaltic rocks by Rio Sta. Cruz, near Lago Argentino; and by Carren-leofú.

AZORELLA PATAGONICA COMPACTA Speg.

Xerophil, having compact cushions; *leaves* smaller, and more rigid than the species, and entire. *Umbels* sessile. Habit of *A. cæspitosa* Cav.

S. Patagon., in rocks by Pan-de-Azucar, near Rio Sta. Cruz.

14. A. PLANTAGINEA Speg.

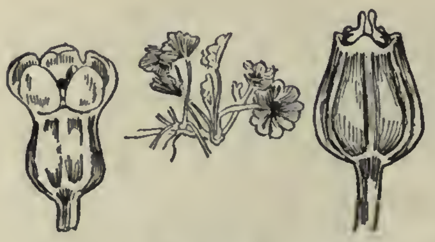
Laxly cespitose perennial, with densely fasciculate *leaves*. *Petioles* long, all membranaceously dilated, glabrous or with marginal pectinate chaffy *scales; limbs* glabrous, obovate or oblanceolate, membranaceous, obtuse, entire, rarely obsoletely repandulous. *Umbels* acrogenous, nearly concealed by the leaves. *Involucre* multifid, glabrous or ciliolate; *flowers* numerous on rather long pedicels.

Patagon., mountains near Lago Traful.

15. A. RANUNCULUS d'Urv.

(Schizeilema.) Glabrous. *Stem* creeping, nodose, rooting at the nodes. *Leaves* long-petioled (25 mm.), rotundate, 4–5-partite, the parts cuneate, trifid, subsegments rounded; *petioles* sheathing at the base. *Peduncles* axillary, shorter than the petioles. *Involucral* leaves linear subulate, longer than the pedicels, toothed on both sides. *Umbel* 3–5-flowered. *Calyx-teeth* obtuse. *Fruit* short, ovate, subterete, contracted at the commissure; mericarps dorsally convex and obtusely 3-ridged. (Fig. 78.)

FIG. 78.



Azorella ranunculus. — Leafage, and magnified flower and fruit. (From *Flora antarctica.*)

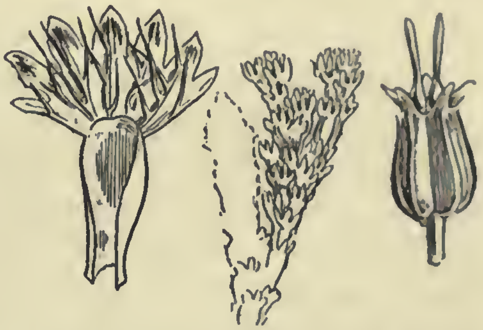
(Habitat of *Hydrocotyle.*)

Falklands, by freshwater; Staaten I.; Magellan; S. Fuegia. (Dusén.) "*Leaf-segments* sometimes linear, sometimes spatulate and dilated." (Speg.)

16. AZORELLA SELAGO Hook. f.

Densely cespitose. *Stems* fastigiate, often elongate, branching, often compact. *Leaves* closely imbricating, appressed, with cymbiform 3-nerved amplexicaul petiole; the *limb* broad-coriaceous, concave, 3–7-cleft, long setose-ciliate on the inside; its segments oblong, 1-nerved, subacute, entire. *Umbel* short-peduncled, 3-flowered, flowers pink; *involucral leaves* linear, subacute. *Calyx-teeth* acute. *Fruit* ovate, with long styles; *mericarps* compressed on the slightly convex back, with 5 ridges; contracted at the commissure. (Fig. 79.)

FIG. 79.



Azorella selago. — Leafy shoot (in centre), and magnified leaf, and fruit. (From *Flora antarctica.*)

(The *laminæ* of the leaves are generally broader than long, concave, with sparse, long hairs internally. Habit of *A. glebaria.*)

(The most abundant plant in Kerguelen I.) W. Magellan at Puerto Angosto reaching 400 m. altitude above the sea-level. Not rare in the mid and moist forest mountain regions of western Magellan. (Dusén.) Fuegia; Staaten I.

A. SELAGO COMPACTA Alboff.

More compact, with narrower columns. *Leaf-segments* triangular to lanceolate, acute, mucronulate.

S. Fuegia, alpine above Ushuaia.

A. SELAGO PULVINARIS Alboff.

Densely cespitose, pulvinar, dwarf, scarcely 20–25 mm. high. *Leaves minute* to 3 mm. long. Otherwise as *A. s. compacta.*

S. Fuegia, at Rio Grande on Beagle Channel.

17. A. TRIFURCATA (Gaertn.) Hook.

Densely cespitose. *Leaves* closely imbricated, spreading, recurved, rigid, oblong, broad above, cleft into 3 subdivaricate, cuspidate lobes; the base sheathing; the margins obscurely ciliate, with deciduous hairs. *Umbel* subsessile. *Involucral leaves* small, subulate, subciliate. *Fruit* broad-ovate, subterete; *mericarps* 5-costate, convex dorsally. *Calyx* obscurely toothed.

"Rather scarce" (J. D. Hooker); "common over the dry places of the steppes" (Dusén). Magellan; Fuegia, at Lapataia and Ushuaia; S. Patagon., "In tufts on ground near Coy R., and in dense clumps on the plain. Forms good fuel." O. A. Peterson, Dec., 1896; W. Patagon.

18. AZORELLA UTRICULATA Griseb.

Suffruticose, cespitose. *Leaves* imbricate, recurved; their *lamina* shining, trifid midway; the lobes linear, acute, mucronate, spreading, the margins recurved, canaliculate below. The *sheaths* dilated, ciliate. *Umbel* pedunculate. *Involucral leaves* 5–6, shortly lanceolate, obtuse, basi-connate. *Pedicels* as long as the peduncle, in fruit much exserted. *Fruit* smooth, shining, utricular, ovoid, obscurely tetragonal. *Calyx-teeth* short, at length separating from the mericarps; which are dorsally flattened, with 5 *vittæ* on the filiform axis.

Magellan.

4. ASTERISCIUM Cham. & Schl.

Glabrous herbs, with erect, branching, few-leaved *stems;* also petioled, palmately cut basal *leaves.* *Umbels* simple, the outer flowers male, the inner fertile and short-pediceled. *Calyx-teeth* prominent; *petals* inflexed at apex. *Style-base* small. *Fruit* dorsally compressed, constricted at the narrow *commissure.*

Species 8, Chili and Argentina. (Fig. in Eng. & Prantl, iii, 8, p. 134.)

1. A. CHILENSE Cham. & Schl.

Glabrous from a woody root, with several terete *stems*, sulcate-striate, 30 cm. high or more, naked above. *Leaves* petioled, cuneate, rounded, mucronate-dentate, 3-lobed. *Peduncle* canaliculate above, amplexicaul. *Umbels* simple, terminal, many-flowered, the *involucral bracts* about 10, as long as the pedicels of the central (fertile) flowers; the marginal (sterile) flowers with long pedicels. *Calyx-lobes* round-ovate, acuminate, *petals* twice as long, elliptical, emarginate. *Fruit* 4 mm., tetragonous-prismatic, 4-winged, crowned by the calyx-teeth.

(Chili); N. Patagon., near Rio Negro.

2. A. FIMBRIATUM Speg.

Glabrous. *Root* long, simple. *Stem* few-leaved; *leaves* alternate, petiolate, suborbicular, denticulate-fimbriate, obscurely 5–7-nerved. *Involucral bracts* 5, lanceolate, entire. *Umbel* simple or compound.

S. Patagon., by Lago Argentino; "pretty."

5. MULINUM Pers.

Cespitose undershrubs, much branching, the branches covered by leaf-sheaths. *Leaves* 3–5-cleft, rigid, pungent, or 3–5-partite with obtuse segments. *Umbels* sessile or stalked, simple, many-flowered. *Involucral bracts* short, free or connate. *Calyx-teeth* conspicuous. *Petals* entire, obtuse. *Disk* broad, depressed. *Fruit* dorsally compressed the commissure narrow, biscutate. *Mericarps* dorsally plane or concave, marginally wing-formed, convex on the commissural face.

Species 17, Chili, Argent., Patagon.

Key to the Species.

A. Leaves trifid.
  b. Leaf-segments linear, pungent. Umbels many-flowered, from upper axils; flowers orange. *leoninum.*
  b2. Leaf-segments (of cauline leaves) subulate. Umbels 5–7-rayed; flowers yellow. *proliferum.*
  b3. Leaf-segments subulate, spiny. Umbels subsessile, ending short branches. *ulicinum.*
  b4. Trifid-leaves cuneate, the segments plane-cuspidate. Umbel many-flowered on a short peduncle. *cuneatum.*
  b5. Trifid leaves imbricating.
    c. Leaves mid-size. Umbels subacrogenous, subsessile, few-flowered. Caudex woody. *patagonicum.*
    c2. Leaves small, from an ovate pericladium. Flower solitary, quasi-acrogenous. *lycopodiopse.*
A2. Leaves trisect, subimbricate, recurved; segments triangular-linear, obtuse. Umbels with 4–6 small, yellow flowers. Diœcious. *valentini.*
A3. Leaves minute, 3-partite, imbricate; the segments linear-lanceolate, bristle-tipped. Flowers yellow-red. Caudex woody. *microphyllum.*
A4. Leaves 5-partite; the segments lanceolate, pungent. Umbel 10–12-flowered; flowers orange. *spinosum.*
A5. Leaves 3–5-palmi-partite, segments oblanceolate, mucronate. Umbels 20-flowered; flowers white. *morenonis.*

1. M. CUNEATUM Hook. & Arn. (*Fragosa spinosa* R. & P.)

Leaves cuneate, trifid; their segments plane, cuspidate; their sheaths long, rigid, ciliate. *Umbel* briefly peduncled, many-flowered.

(Chili); S. Patagon., by Rio Sta. Cruz.

2. M. LEONINUM Lor.

Aromatic. *Root* woody, multicipital. *Leaves* trifid, the segments linear, pungent; the longer leaves 45 mm. long, the sheaths to 25 mm.

Umbels many-flowered, solitary on axillary peduncles from the upper leaves. *Involucre* many-leaved; its leaves linear-lanceolate, connate at base, ciliate. *Petals* orange, broad elliptic, obtuse.

N. Patagon.

3. MULINUM LYCOPODIOPSE Speg.

Glabrous, compact, cespitose. *Leaves* erect, small, appressed, densely imbricate, trifid on an ovate pericladium, non-ciliate, entire. *Flowers* seemingly acrogenous, solitary. *Peduncle* short, 3-bracteolate. *Fruit* mid-size, ovate.

S. Patagon., high rocks by Rio Chico and Lago Argentino.

Differs from *Azorella lycopodioides* by the sheaths and petiole being non-serrate, and especially by the fruit.

4. M. MICROPHYLLUM Pers. (Cav.).

Stem fruticose, 7 cm. high, covered by leaf-sheaths. *Cauline* leaves imbricate, minute, 3 partite, the lobes linear-lanceolate, ending in a bristle. *Petioles* amplexicaul, basally ciliate. *Flowers* yellowish-red when dry.

Patagon., by Puerto Deseado.

5. M. MORENONIS (O. Ktze.) Speg. (*Huanaca morenonis* O. Ktze.)

Stems short, with involute, wooly leaf-sheaths, scarcely 5 cm. high. *Leaves* glabrous, palmately 3–5-partite; segments 1 cm. long, by 1 mm. wide, crass oblanceolate with a setiform mucro. *Petiole* 2 cm. long, the sheath 1 cm. broad. *Peduncle* solitary, subterminal, 8 cm. *Inflorescence* subumbelliform, 20-flowered, simple. *Bracts* lanciform, involucrate, reflexed. *Petals* white, ovate, acute. *Calyx-teeth* minute. *Fruit?*

Patagon., at confluence of Rio Limay and Rio Neuquen; along Carrenleofú. "Like tall forms of *M. microphyllum* (Pers.)," DC.

6. M. PATAGONICUM Speg.

Cespitose from a woody caudex, glabrous. *Leaves* mid-size, erect, imbricating, trifid; the petioles slender broadening below in a pericladium. *Umbels* subacrogenous, few-flowered, subsessile. *Involucral leaves* 3–5, small. *Fruits* pyramidal-ovate, twice as long as the pedicels.

N. Patagon., by Lago Nahuel-huapi.

7. M. PROLIFERUM Pers.

Root tortuose. *Stem* 7–10 cm. high. Cauline *leaves* trifid; their segments subulate. *Petioles* sheathing, glabrous. *Umbels* 5–7-flowered.

Involucral leaves distinct, short, slightly spreading. *Flowers* yellow. (Perhaps a var. of *M. spinosum*. Is scarcely proliferous.)

S. Patagon., Puerto Deseado; Rio Sta. Cruz.

8. MULINUM SPINOSUM Pers.

Stem 15 cm. high. *Leaves* 5-partite, the segments lanceolate, pungent; the petioles sheathing the base of the stem. *Umbel* 10–12-flowered. *Involucral leaves* distinct, short, spreading. *Flowers* orange.

(Chilian Andes); S. Patagon., by Rio Gallegos, Nordenskj.; by Lago Nahuel-huapi (Dusén), and Rio Chubut.

M. SPINOSUM TRIACANTHUM (Gris.) O. Ktze.

Leaves trisect, 1 cm. long. *Umbel* more or less sessile.

Patagon.

M. SPINOSUM TRISPINESCENS O. Ktze.

Leaves tripartite; segment spiniform, usually longer. *Umbel* peduncled.

(Argentine); Patagon.

9. M. ULICINUM Gill. & Hook.

Glabrous, much branched, low, odoriferous. *Leaves* trifid; segments subulate, spiny. *Umbels* nearly sessile, terminating the very short branches. *Involucral leaves* linear-subulate. *Petals* with an elevated median line. *Fruit* elliptic.

(Chili); S. Patagon., by Hatcher near Rio Chico.

10. M. VALENTINI Speg.

Cespitose, diœcious. *Leaves* subimbricate, recurved, spreading, rigid, trisect, the segments triangular-linear, obtuse, sulcate-nervous on upper surface; *petioles* short. *Umbels* subacrogynous, having 4–6 small, yellow flowers.

Patagon.; Chubut, near Trelew.

6. SANICULA Linn.

Glabrous herbs, with palmately, 3–7-foliolate or pinnatifid *leaves*, and compound, few-rayed *umbels*, with *leafy involucres* and small *involucels*. *Calyx-teeth* persisting; *petals* obovate with an inflected point. *Fruit* subglobose with hooked bristles or muricate. *Oil-tubes* 5.

Species 20, N. temperate, and in S. Amer. and S. Africa.

1. Sanicula graveolens Poepp. (*S. macrorhiza* Colla.)

Leaves bipinnatipartite, very long petioles; lower divisions petiolulate, deeply 3–5-pinnatifid, incised-toothed, the teeth cuspidate. Floral branches long, naked, simple or multifid to subumbellate. Umbellules 2–6, subsessile or long-stalked. Flowers 15–60, crowded, the outer sterile, subsessile, later pediceled; the central female, sessile.

(Chili); Chubut, in mountains near Carren-loefú.

2. S. patagonica Speg.

Low, green-glaucescent. Stems erect, 10 cm. high, subfastigiate, obsoletely subtrichotomous. *Leaves* 5–3-partite, segments petiolulate, obovate-cuneate, once or twice tripartite; lobes narrow, entire, mucronulate. *Peduncle* surpassing the petioles; *umbels* 3–5-rayed; the rays longer than the peduncle, and 3-flowered; flowers with long slender *pedicels*. *Involucres* and *involucels* 3–0-leaved, the *leaves* linear. *Achenes* densely verruculose-muricate.

N. Patagon., at confluence of Rivers Limay and Neuquen.

7. ERYNGIUM Linn.

Herbs, usually with spiny-toothed and lobed *leaves*, and densely bracted heads or spikes of small flowers. *Calyx-teeth* sharp. *Petals* erect, emarginate, without an inflected point. *Fruit* ovoid, scaly or tuberculate. *Carpels* nearly terete.

Species 150, widely distributed in tropical and temperate regions, (Fig. in Eng. & Prantl, iii, 8*b*, p. 136.)

1. E. agavifolium Griseb.

Tall, thickish plant. *Leaves* parallel-nerved, over 1 meter long, 15 cm. broad, oblong-linear, acuminate, dentate-pinnatifid, the cauline semiamplexicaul; large and small teeth sometimes alternating. *Heads* ovoid-oblong, more than twice as long as the involucre. *Involucral leaves* 20. lanceolate-acuminate, entire, spreading or reflexed. *Bractlets* lanceolate-acuminate, pungent, twice as long as the flower.

(Argentina); N. Patagon., near Rio Negro.

2. E. chubutense Neger.

Stemless, root fibrillose, with long-petiolate (10 cm.), tufted, radical *leaves;* their segments lobed-toothed; the lobes coarse or narrow, mucronate; the terminal segment large. *Petiole* flat. *Upper leaves* with shorter petioles, or subsessile, narrower. *Scapes* equalling the radical leaves, dichotomously dividing, with *sessile heads* in their forkings, the heads oblong or ovate, having entire, very narrow bracts exceeding them. Short, linear, pungent *pales* and sessile *flowers*.

At Rawson, near mouth of Rio Chubut. (Dusén.)

3. ERYNGIUM EBRACTEATUM Lam.

To 60 cm. high. Habit of *Sanguisorba*. *Leaves* linear, parallel-nerved, mostly with distinct ciliate setæ. *Stem* trichotomous-corymbose. *Heads* unarmed, cylindric. *Involucral leaves* and pales entire, shorter than the flowers.

(S. Brazil); N. Patagon., by Rio Negro, in islands and swamps.

4. E. HUMIFUSUM Clos.

Nearly *stemless*, cespitose, prostrate; root fibrilliferous. Radical *leaves* petiolate, linear to linear-lanceolate, ciliate-spinose. *Peduncles* from roots, often with many equal petioles, or 2–3-times longer, divided. *Bracts* linear subulate, ciliate-spinose, exceeding the head. *Pales* smaller, oblong, acute. *Flowers* sessile.

At Bahia Blanca; N. Patagon.?

5. E. PANICULATUM Cav. & Domb.

Stem nearly naked, having umbellate branches at its top, there *1–3-headed*. *Leaves* parallel-nerved, ciliate-spinose. Floral leaves very short. *Involucral leaves* 9–10, lanceolate, they and the pales entire.

(Chili; Brazil; Bahia Blanca); N. Patagon. Called Sheta by the Araucanians. It is being exterminated from Buenos Aires, apparently by the competition of European thistles.

8. OSMORRHIZA Raf., 1818. (*Washingtonia* Raf., 1818.)

Roots fleshy. *Leaves* decompound. *Umbels* few-rayed. *Involucre* and *involucel* of few narrow bracts or none. *Flowers* white. *Fruit* narrow, linear or oblong-linear, attenuated at base. *Carpel-ribs* subequal.

Species 13, Asia and N. and S. Amer. (Andes).

1. O. BERTERII DC. (*O. chilensis* Hook. & Arn., *Washingtonia berterii.*)

Primary petioles often exceeding the leaves. *Umbels* triradiant; *umbellules* 2–4, radiate; pedicels very slender, 24 mm. long. *Fruits* cylindrical.

Valdivia; Patagon.; Magellan, to Cape Horn. "In thickets over the steppe-land, and on land near the forests."

2. Osmorrhiza claytoni (Michx. sub *Myrrhis*), *Washingtonia claytoni* Britt., *Osmorrhiza brevistylis* DC.)

Erect, widely branching above, pubescent. *Style-base* 1 mm. long, slender, conic, as broad as the fruit but only half as long.

(Himalayas, Siberia, Eastern N. Amer.); by Hatcher in Cordilleras of S. Patagon., and at Punta Arenas.

9. CORIANDRUM Linn. Coriander.

Annual, branching, glabrous herbs, with pinnately dissected *leaves*, the basal with ovate, and the cauline with linear ultimate segments. *Umbels* compound, few-radiate with no involucre, and with involucel of few filiform bracts. *Flowers* white. *Fruit* with broad, obtuse, scarcely prominent *secondary jugæ.*

Species 2, Orient.

C. sativum Linn.

Fruit subglobose (not twin).

(Cultivated); Patagon.

10. OREOMYRRHIS Endl.

Cespitose, with bi-tripinnate radical *leaves*, and short, thick peduncles bearing simple *umbels* with numerous *involucral leaves* and white *flowers. Calyx-teeth* obsolete. *Petals* ovate, mostly hairy outside. *Fruit* long-ovoid, contracted above.

Species 6, S. Amer. and Mex., Austral., Tasman., and N. Zeal.

1. O. andicola Endl. (*Caldaria* in DC. Prodr. *Myrrhis* in Kunth.)

Stems cespitose, hirtellous; from a thick, fleshy, edible rootstock. *Leaves* tripinnatipartite, rough. *Scapes* scarcely twice as long as the leaves. *Umbels* 10–12-flowered, fasciculate-crowded. *Fruits* oblong-obtuse; the *mericarps* 5-costate.

(Chili); Patagon. (?). (Same as the next?)

2. O. daucoides Endl. (sub *Azorella*, d'Urv. in DC. Prodr.).

Leaves all radical, long, pinnatisect, their segments remote, opposite, shortly pinnatifid; subsegments alternate, acutely incised. *Scapes* short

(1 cm.), hirsute. *Umbel* with 8–10-leaved involucre; 3–8-flowered. *Leaves* scarcely exceeding the scape.

(Mex., Andes); Magellan, S. Fuegia; Falklands.

11. CONIUM Linn. Hemlock.

Tall, glabrous biennials, with spotted *stem*, pinnately decompound *leaves* and many-rayed, compound *umbels* of small, white *flowers*. *Involucres* and *involucels* of ovate bracts. *Calyx-teeth* obsolete. *Petals* obcordate. *Carpels* 5-ribbed, without vittæ.

Species 2, one African, and the following:

C. MACULATUM Linn.

Lower *leaves* petioled; upper subsessile. *Leaflets* ovate in outline, the segments toothed-incised. *Petioles* dilated-sheathing.

(Eurasia; naturalized in N. Am.); N. Patagon., garden-weed near Carmen de Patagones. Terribly poisonous.

12. APIUM Linn. Parsley.

Glabrous herbs, with pinnately divided *leaves*, the segments incised and toothed, and white to yellowish flowers in compound umbels, with or without *involucres*. *Calyx-teeth* obsolete. Petals ovate; their apex often inflected. *Fruit* laterally compressed, ovate, with prominent *ribs*, and *vittæ* mostly 1 in each interval, also 2 facing the commissure.

Species 20, nearly cosmopolitan, extratropically; southward in S. Africa, Australia, Chili, and in Tristan.

1. A. AUSTRALE P. Thou.

Leaves bipinnatisect, their segments cuneiform. *Branchlets* whorled. *Umbels* sessile, crowded.

(Argentina; Tristan); N. Patagon., by Rio Negro.

(Is it *A. commersonii* DC.?)

2. A. CHILENSE Hook. & Arn.

Stem subterete, scarcely angulate. *Leaves* patent, bipinnatisect; their lobes cuneate, subtrifid-incised, entire. *Petals* apically involute.

(Subsp. of *A. graveolens* L.?) "Often prostrate in the south and always mild and wholesome."

S. Chili to Magellan; S. Patagon., at Rio Coy (J. B. Hatcher); Killik Aike (Barnum Brown).

3. Apium commersonii DC.

Leaves pinnatisect, the segments multifid, with narrow linear acute laciniæ. *Petals* denticulate, with inflexed tip. *Styles* rather long and divaricate.

Patagon., by Rio Sta. Cruz; Golfo de San Jorge.

4. A. graveolens Linn. Celery.

Basal and lower *leaves* long-petioled; others short-petioled to subsessile, the segments 3–5, broadly ovate to oval, toothed and incised, 12–16 mm. long. *Umbels* oppositifoliose and terminal, 3–7-rayed. *Involucres* and *involucels* small or none. *Flowers* minute, white, on short pedicels. *Fruit* oval, its ribs slightly *winged.*

(Eur.; escaped in N. Amer., Chili; also in S. Africa, Tristan, and Tasmania); N. Patagon., at Lago Nahuel-huapi; W. and S. Patagon., by Dusén & Speg.; abundant at Magellan; Fuegia, passim; Staaten I.; Falkands.

4. A. leptophyllum (DC.) F. Muell. (*A. ammi* Jacq., Urb.)

Slender, much branched. *Leaves* ternately multisect, with capillary segments. *Umbels* oppositifoliose, 2–3-rayed, *without an involucre. Petals* entire, small. *Stamens* not protruding. *Delicate flowers* and small *fruit.*

(Old World and Amer., chiefly in warm parts, also grown wild in Austral.); N. Patagon., by Rio Negro.

(Has been variously referred to *Sison*, *Arethusa* and *Helosciadium.*)

5. A. prostratum Labill. (sub *Petroselinum* in DC. Prodr.).

Stem procumbent, flexuose. *Leaves* pinnatisect; the segments petiolulate, pinnatifid; the subsegments 5–7, lanceolate, and apically trifid. *Umbels* subsessile, oppositifoliose; *involucre* about 1-leaved.

(Australia and Tasmania); Magellan? Edible.

6. A. ranunculifolium H. B. & K.

Leaves subternatisect; their segments obovate-cuneate, the lateral 5-lobed, the intermediate 3-partite; subsegments 2–3-lobed.

("Apio-a-moron"; Columbia and coal regions of New Granada); N. Patagon.

13. AMMI Linn.

Stout herbs, with striate stem and thrice-pinnatipartite *leaves*, and large many-rayed compound *umbels*, with large, pinnatipartite *involucral-leaves*. *Calyx-teeth* obsolete. *Petals* white, unequal, obcordate, radiant, their apex notched and inflected. *Fruit* long, the mericarps at length slightly curved, 5-angled.

Species 6–7, Mediterr. region to the Azores. (Fig. in Eng. and Prantl, iii, 8. p. 190.)

A. VIZNAGA (L.) Lam.

Annual or biennial. *Stem* terete, glabrous. *Leaves* decompound, their segments linear, cuspidate, divaricate. *Rays of umbel* at length contracted and indurate.

(Mediterr. lands to Madeira); N. Patagon., by Rio Negro.

14. SIUM Linn.

Marsh herbs, with pinnate *stem-leaves;* the lower and the radical leaves often pinnatisect. *Flowers* white, in large compound *umbels*. *Bracts* of involucre and involucel numerous and narrow. *Calyx-teeth* visible. *Petals* with inflected apex. *Styles* short. *Fruit* oval, subcompressed, with prominent ribs, and 1–3 vittæ in the intervals.

Species 8, N. Temperate and S. Africa.

(?) S. LATIFOLIUM Linn.

Root creeping. *Stem* sulcate-angulate. *Leaf-segments* lanceolate-acuminate, unequal at the base, serrate, rarely pinnatifid. *Calyx-teeth* long.

(Eur., in swamps); N. Patagon., by Rio Negro, flowering but never fruiting in this region.

15. LILÆOPSIS Greene. (*Crantzia* Nutt. 1819, non Scop. 1777.)

Small, *creeping*, glabrous marsh-herbs, with hollow, linear, terete *leaves*, transversely nodose; and simple *umbels* of white flowers, with minute *calyx-teeth*, and *petals* apically infolded. *Carpophore* not developed.

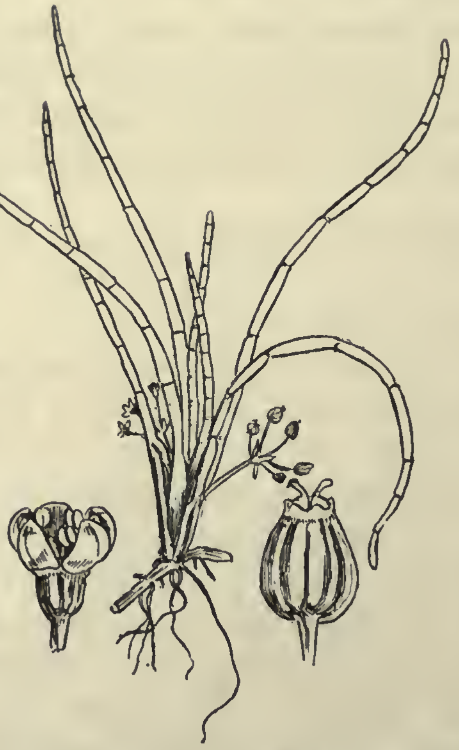
Species 1, viz:

L. LINEATA Michx.

Petioles linear-spatulate; no *leaf-blades*. (Fig. 80.)

(N. and S. Amer.; also in Austral. and New Zeal.); Patagon., by Rio Negro, and Rio Gallegos; Magellan, at Gregory Bay; S. Fuegia; Falklands, abundant near streams leading from freshwater lagoons to the sea; usually buried in the gravel. (Fig. in Eng. & Prantl, iii, 8, p. 205, is inaccurate as to the leaves; better in Britt. & Br., ii, p. 521.)

FIG. 80.



Lilæopsis lineata. — The plant, nearly natural size; also magnified flower and fruit. (From *Flora antarctica.*)

16. FŒNICULUM Linn. Fennel.

Erect, glabrous herbs, with pinnately decompound *leaves,* having capillary segments, and compound *umbels* of yellow flowers without involucres. *Calyx-teeth* obsolete. *Petals* apically obtuse or retuse. *Fruit* oblong-terete, ribbed, *vittæ* solitary in the intervals, also 2 facing the commissure.

Species 4, Old World.

F. PIPERITUM DC.

Leaf-lobes subulate, very short, rigid, thick. *Umbels* with 8–10 rays. (S. Eur. to Persia); N. Patagon., by Rio Negro.

17. LIGUSTICUM Linn. Lovage.

Perennial, glabrous, usually branching herbs with aromatic roots, ternate *leaves* and large compound *umbels* of white flowers. *Involucral bracts* narrow, often deciduous; involucellar bracts linear. *Calyx-teeth* obsolete. *Stylopodium* conical. *Fruit* oblong-ovoid, not flat; ribs prominent, with broad valleys intervening; oil-tubes 2–6 in the valleys.

Species 20, in Northern Hemisphere.

L. PEUCEDANOIDES Presl.

Leaves decompound, their segments linear. *Umbels* oppositifoliose. *Rays* wing-angled. *Petals* entire.

(Chili); Patagon.

18. PASTINACA Linn. Parsnip.

Erect, branching herbs with thick *roots;* and the basal and lower *stem-leaves* pinnate, having ovate, lobed, and toothed segments. Compound *umbels* or yellow flowers, having *neither involucre nor involucels. Fruit* dorsally flattened, with lateral wings.

Species 14, Eurasia.

PASTINACA SATIVA Linn.

A meter high, root fleshy; plant glabrous or slightly hairy. *Umbel-rays* 7–15, slender, the pedicels very slender.

(Eur. and cultivated in U. S., naturalized); N. Patagon., islands in Rio Negro (escaped).

19. DAUCUS Linn. Carrot.

Mostly hispid-pubescent herbs, with pinnately decompound, finely divided *leaves*, and compound *umbels* of white or reddish flowers, having *involucres* of pinnatipartite leafy bracts, and involucels of entire or toothed bracts. *Calyx-teeth* obsolete. *Petals* apically inflected, larger towards margin of the umbel. *Fruit* oblong, with barbed prickles on the winged secondary ribs.

Species 25, widely dispersed.

1. D. AUSTRALIS Poepp.

Stem simple, hispid, the hairs in the lower part reflexed. *Leaves* bipinnatisect, hispid; the segments many-cleft; their lobules acute, short. *Involucre* multifid, almost surmounting the dense few-rayed umbel. *Prickles* of fruit apically glochidiate. *Flowers* small, probably yellow; whole plant also of yellowish hue.

(Chili); S. Patagon.; W. Patagon., on steppes and upwards in the Aysen Valley. (Dusén.)

2. D. PUSILLUS Michx.

Stem retrorsely hispid at the base, scabrid upwards. *Leaves* bipinnatisect, scabrous, the segments divided into linear subsegments. *Involucral leaves* pinnatifid, as long as the small umbel. *Prickles* of fruit as long as its breadth, apically glochidiate.

(S. United States); N. Patagon., at confluence of Rivers Limay and Neuquen.

Family 82. CORNACEÆ. Dogwood Family.

Mostly woody plants, with simple penninerved exstipulate *leaves*, and *flowers* in the Patagonian species diœcious, racemed and 5-merous. *Petals* and stamens inserted on a disk. *Calyx* adnate to the *ovary*, which is 3-celled, its cells 1-ovulate. *Fruit* drupaceous, with long *embryo* in axis of fleshy endosperm.

Species 85, most in N. Hemisphere.

GRISELINIA Forst.

Trees or shrubs, often epiphytic or climbing, glabrous, with thickish, round or angular branches, and rather long, leathery, entire, spiny-toothed or angled, alternate *leaves*, the petioles dilated at their base. *Flowers* diœcious, 5-merous, small, yellow-green or dark purplish, in smooth or hairy racemes or panicles; *bracts* mostly small and deciduous; male flowers with 5 petals and 5 stamens. *Style* 3-parted or 3 styles.

Species 7, S. Amer. and N. Zeal.

G. RUSCIFOLIA (Clos.) Taub. (sub *Decostea*, now a section of the genus, having apetalous female flowers).

Leaves lanceolate, rounded or obtuse at the base, not entire, often apically 3-toothed with 3 principal, and also secondary veins.

(S. Braz.; Paraguay; Chili); W. Patagon. (Fig. in Eng. and Prantl, iii, 7, p. 270.)

Family 83. ERICACEÆ. Heath Family.

Shrubs, or occasionally herbs, with simple, exstipulate *leaves*, and regular, mostly sympetalous *flowers*, and mostly with hypogynous 5(–4)-merous *perianth*. *Stamens* twice as many as the corolline divisions (or by abortion only as many), hypogynous or attached to the very base of the corolla-tube, the *anthers* 2-celled, opening by pores or by short slits, often bearing inferior appendages. *Ovary* several (3–10, mostly 5) -celled; *style* 1. *Seeds* with endosperm.

Species 1,350, cosmopolitan. The true heaths (*Ericoideæ*) are almost confined to Africa and the Mediterranean and Atlantic coasts of the Old World.

Neither the heaths (Ericoideæ) nor the *Rhododendrons* are represented in Patagonia.

KEY TO THE GENERA.

A. Ovary superior, not adnate to the calyx. Fruit loculicidal. Anthers ending obtusely, or as short, erect-awned processes.

b. Calyx at length enlarged and fleshy under and around the capsule. Anther-cells pointed or awned. 1. *Gaultheria*, p. 645.

b2. Calyx not changed after flowering. Fruit a globose berry. 2. *Pernettya*, p. 645.

A2. Ovary inferior, adnate to the calyx. Stamens on the base of the corolla. Anthers mostly spurred, elongated with subterminal pores. 3. *Vaccinium*, p. 648.

(*Andromeda myrsinites* Lam., is *Lebetanthus* of *Epacridaceæ.*)

1. GAULTHERIA Hook. f.

Shrubs, with alternate, evergreen *leaves*, and small axillary, 5-merous *flowers*, with urn- to bell-shaped corolla, 10-staminate at its base, and its lobes recurved. *Anthers* opening by a pore, mostly awned. *Ovary* 5-celled, enclosed in the fleshy calyx, forming a *berry.*

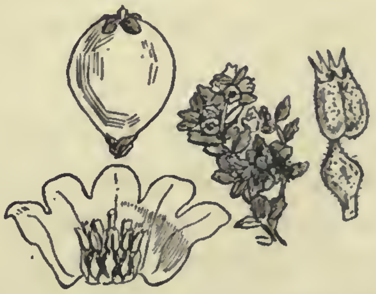
Species 100, American, N. and S.; also in the Orient, and in the Himalayas at elevations; in S. E. Australia, Tasmania, and New Zeal. In Antarctic regions this genus and *Pernettya* replace the northern *Arbutus.*

G. MICROPHYLLA Hook. f. (*G. antarctica*, *Pernettya microphylla* Gaud.)

Low, branching, the branches slender setose. *Leaves* broad ovate or oblong, obtuse, thickened on the margins, obscurely serrate. *Pedicels* short, fasciculate, 1-flowered, recurved. Corolla globose, white. *Berries* red or white, with a pleasant aromatic taste. (Fig. 81.)

Magellan; Fuegia; Staaten I., Falklands.

FIG. 81.



Gaultheria microphylla. Flowering branch, with magnified floral organs, and (on right) stamen, and (above on left) fruit. (From *Flora antarctica.*)

2. PERNETTYA Gaud.

Low, evergreen shrubs, with coriaceous, ovate-lanceolate, usually serrate *leaves*, and small, mostly solitary *flowers* nodding on long axillary pedicels having scale-like *bracteoles*. *Calyx* free from the ovary, scarcely enlarged in fruit. *Corolla* urn-shaped, shortly 5-lobed, *10-staminate* at its base. *Disk* 10- or 5-lobed. *Berry* large, globular, *seeds* numerous.

Species 26, most in the Andes; with stragglers in Brazil, Tasmania, and New Zeal. (Fig. in Eng. & Prantl, iv, 1, p. 46.)

KEY TO THE SPECIES.

A. Leaves lanceolate, spiny-serrate, small, crowded, flowers minute, on axillary pedicels. *parvifolia.*

A2. Leaves linear-lanceolate, mucronate-acuminate, serrate. *angustifolia.*

*A*3. Leaves linear-elliptical, thick. Racemes on branches. *patagonica.*
*A*4. Leaves narrow-ovate, mucronate-acuminate, serrate. *mucronata.*
*A*5. Leaves oblong, acuminate both ways, apically spinose, obscurely serrate. Flowers many, mostly ending the branches. *palenæ.*
*A*6. Leaves oblong, mucronate, entire. Peduncles 1-flowered, axillary. *philippiana.*
*A*7. Leaves ovate, subentire, distichous. Pedicels 1-flowered, axillary.
  b. Leaves petiolate, obtuse. Branches velvety to rusty. *chubutensis.*
  *b*2. Leaves subsessile, subacute, imbricate; edges beveled. *empetrifolia.*
*A*8. Leaves broad, broader downwards. *furens.*

1. Pernettya angustifolia Lindl.

Erect, branching, the branches minutely puberulous and angulate; *leaves* linear-lanceolate, mucronate-acuminate, remote, serrate, glabrous, 1-nerved. *Pedicels* axillary, solitary, 1-flowered, half as long as the leaf; glabrous, naked; *bracteolate* only at the very base. *Leaves* half as large as in *P. phillyreæfolia*, and less rigid. *Flowers* yet smaller, and *pedicels* bursting from some bracteoles, for half their length, or more scaly and imbricate.

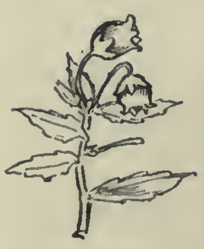
(Chili, near Valdivia). Patagonia? "Like *P. philippiana* (Phil.) Speg., but the branches are not wandlike and the leaves are serrate."

2. P. chubutensis Speg.

Shrub, with sordid, ferruginously puberulent branches, the branchlets covered with golden velvet. *Leaves* distichous, ovate, shortly petioled, margins scarcely revolute, entire, apex obtuse; rigid, but not coriaceous, dull pulverulent on the epiphyll, glabrous on the hypophyll. *Flowers* solitary in the axils of the upper leaves, pediceled, puberulous.

Patagon., Chubut, in rocky elevated shrubberies.

Fig. 82.



Pernettya empetrifolia, slightly reduced.

3. P. empetrifolia Gaudich.

Cespitose-diffuse, much branching. *Leaves* sessile, distichous, finely cartilaginous-serrulate, scarcely acute, imbricate; the pedicel longer, several-bracteolate, erect. *Flowers* white. *Berries* (of *P. pumila* Hook.) "like berries of bilberry." (J. Ball.) (Fig. 82.) (Leaf-edges beveled revolute—G. M.)

(S. Chili); Fuegia to Cape Horn; Falklands. Prostrate stems sometimes 6 meters long. Both pink and white berries; also with cones representing diseased shoots caused by puncture of an insect. Bushels of the berries can be collected, and they are cooked as huckleberries. The leaves of Fuegian specimens are small and densely imbricated.

S. Patagon., J. B. Hatcher (determined in Royal Gardens, Kew).

PERNETTYA EMPETRIFOLIA LEUCOCARPA (DC.) (*P. leucocarpa* DC.)

Probably a form of *P. empetrifolia*, having the *pedicels* shorter than the leaves.

Magellan.

P. EMPETRIFOLIA PUMILA (Hook).

Low, leaves smaller, closely imbricating. Probably the same as *P. empetrifolia.*

Magellan; Staaten Is. Fuegia (Wilkes Exped.).

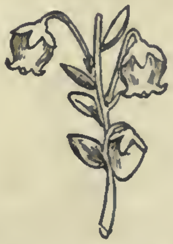
4. P. FURENS Klotsch.

Leaves broad-oval, broader downwards.

(Peru); W. Patagon. (?).

5. P. MUCRONATA (Linn. f.) Gaud.

FIG. 83.



Pernettya mucronata, slightly reduced.

Erect, branching, glabrous; leaves narrow-ovate, serrate, mucronate-acuminate. (Fig. 83.)

Patagon., Cabo Negro by Hatcher; Magellan; Fuegia passim, to Cape Horn. "One of the most abundant of Fuegian plants; having cones from insect-punctures, as *P. empetrifolia.*" (J. D. Hooker.)

W. Patagon., by Lago Nahuel-huapi and Rio Aysen (Dusén); Fuegia (B. Brown). "Varying much in height and in the size and thickness of the leaves. *Fruit* red or blackish, sweet or bitter, small or large, but always edible." (Speg.)

6. P. PALENÆ Phil.

Branches slender. *Leaves* almost membranous, oblong, equally acuminate both ways, yet the apex spinose-cuspidate, obscurely serrate. *Flowers* numerous on the ends of branches or on nearly capillary peduncles.

At Rio Palena, in S. Chili; S. Patagon. by Lago Argentino (Speg.); Chubut.

7. P. PARVIFOLIA Phil.

Low shrub, much branching, cespitose, 20 cm. high. *Leaves* small, 7 mm. long, crowded, imbricating, lanceolate, spiny-serrate, carinate.

Peduncles axillary, equalling the leaf. Diam. of corolla scarcely 3 mm. Fruit?

Magellan, near Punta Arenas.

(*P. serpyllifolia* DC. with branchlets hispid, is *Gaultheria microphylla*, fide Index Kew.)

8. PERNETTYA PATAGONICA Speg.

Densely fastigiate-branching, glabrous. Leaves linear-elliptical, attenuate both ways, scarcely denticulate, thickly coriaceous, only the primary nerve conspicuous, not mucronate. Flowers subracemose on the ends of the branches. Peduncles slender, about as long as the leaves, scarcely bracteolate at their base.

S. Patagon., near Lago Argentino.

9. P. PHILIPPIANA (*P. buxifolia* Phil. non Mart. & Gal.). Speg.

Leaves oblong-elliptical, mucronate, subentire, veinless on upper surface, 21 mm. long by 6 mm. broad. Branches wand-like. Peduncles 1-flowered, axillary, not half as long as the leaf, twice as long as the corolla.

(Chili, Cordillera of Nahuel-buta); S. Patagon.; elevated shrubberies near Lago Argentino.

3. VACCINIUM Linn. Blue-berry, Huckle-berry.

Mostly branching shrubs, with alternate, often coriaceous *leaves*, and small *flowers* in racemes or clusters or solitary. *Calyx-tube* adnate to the ovary, persistent. *Corolla* 4–5-toothed, superior. *Stamens* 8–10, anthers opening by terminal pores or chinks. Ovary-cells several-ovulate; style simple, straight; *berry* globular.

Species 125, widely distributed.

V. ULIGINOSUM Linn.

15–60 cm. high. *Leaves* glabrous, subsessile, pale underneath, ovate or oval, obtuse or retuse, basally narrowed, entire, finely veined, 10–25 mm. long. *Flowers* 2–4, or 1, near the ends of the branches, shorter than the drooping pedicels, 4–5-merous, with ovoid or urn-shaped corolla. Anthers dorsally awned. *Berry* blue, with a bloom.

(Eurasia and Canada.)

VACCINIUM ULIGINOSUM PATAGONICUM n. var.

Low shrub, 15 cm., with smaller, crowded *leaves*, 6 mm. long. "With red edible *berries*."

Cordilleras of S. Patagon., by J. B. Hatcher, Feb., 1897.

Family 84. EPACRIDACEÆ.

As *Ericaceæ;* but usually with 1-celled *anthers*, and *stamens* isomerous with the corolline lobes, and often inserted in the corolla-tube. *Sepals* not united, but the South American genus has hypogynous stamens, with 2-celled anthers.

Species 300, in S. Australia, Tasman., N. Zeal., with some species in New Caledonia, Himalaya to Malaya, Fiji, Hawaiia; and in Patagonia and Fuegia.

LEBETANTHUS Endl.

Glabrous, subscandent undershrub, with small, distichous, evergreen *leaves*, ovate, acute, serrate; and axillary short-pediceled, solitary *flowers* as long as the leaves. *Calyx* enclosed in large bracts. *Corolla* subcampanulate. *Stamens* hypogynous; their anthers 2-celled.

Species 2, Antarctic Amer.

Lebetanthus is closely related to *Prionotes* of Tasmania; J. D. Hooker calls attention to the fact that they both affect a moist woody region, contrary to the habit of both Epacridaceæ and Ericaceæ.

1. L. AMERICANUS Endl.

Leaves subsessile, coriaceous, subparasitical. (Figs. in Eng. & Prantl, iv, i, p. 72.)

Patagon.; Staaten I.; W. Magellan, at Puerto Angusto (Dusén); Fuegia (Fuegian name Kapa).

2. L. MYRSINITES (Lam. sub *Andromeda; Pernettya microphylla* Gaud.).

Prostrate, much branching, glabrous. *Leaves* short-petioled, ovate, acute, obtusely serrate, rusty, venulose underneath.

Magellan; W. Patagon.

Family 85. PRIMULACEÆ. Primrose Family.

Herbs, with regular, usually sympetalous, 5-merous, inferior *flowers*, having mostly epipetalous *stamens*, as many as the corolline divisions and *opposite* them (sometimes also with an outer alternate series of staminal rudiments). *Ovary* superior (half-inferior in *Samolus*), 1-celled and 1-styled; with free-central *placenta*. *Seeds* numerous, with endosperm.

Species 350, in the Northern Hemisphere; and a few in S. Africa, and S. Amer.

KEY TO THE GENERA.

- *A*. Ovary superior; no staminal rudiments.
  - *b*. Corolla-tubes imbricating. Flowers often in involucrate umbels.
    - *c*1. Corolla-tube exceeding the calyx; style slender. — 1. *Primula*, p. 650.
    - *c*2. Corolla minute; style short. — 2. *Androsace*, p. 651.
  - *b*2. Corolla minute; its lobes contorted. Small plants; leaves mostly opposite.
    - *c*1. Fruit opening by valves. Corolla 5-lobed. — 5. *Asterolinum*, p. 653.
    - *c*2. Fruit circumscissile. Corolla 4–5-lobed. — 6. *Anagallis*, p. 653.
  - *b*3. Corolla exceeding the calyx, 5–6-partite. — 4. *Lysimachia*, p. 652.
- *A*2. Ovary half-way adnate to calyx. Staminal rudiment mostly between the stamens. Style short. — 3. *Samolus*, p. 652.

1. PRIMULA Linn. Primrose.

Scapose herbs, with basal *leaves*, and funnel- or salver-form *corolla*, its tube exceeding the calyx. *Stamens* 5, included. *Ovary* superior, globose or ovoid. *Style* slender; *stigma* capitate. *Seeds* numerous, peltate. *Capsule* 5-valved at summit.

Species 150, mostly N. Temperate; a few in Java and Magellan.

1. P. FARINOSA Linn.

Leaves spatulate or oblong, 3–10 cm. long, tapering to a petiole, crenulate, greenish above, white-mealy beneath. *Scape* much exceeding the leaves, bearing an umbel of pink or lilac, or whitish flowers, with an involucre of minute acute bracts. (Eurasia and Greenland to Canada.)

P. FARINOSA MAGELLANICA (Lehm.) Hook. f. (*P. magellanica* Lehm.)

More robust and its *leaves* more deeply toothed than in the arctic and European species. *Leaves* venous, ovate-lanceolate or rhomboid, glabrous, crenate, subobtuse, mealy below. *Sepals* lanceolate, subobtuse, glandular-ciliate. *Flowers* white.

Magellan; Fuegia to Cape Horn, Falklands, by Hatcher in S. Patagon., near Rio Sta. Cruz.

Not found in the Rain-forest zone, nor in the Andes. "The Falkland Is. specimens are more normal than those at Magellan or in Fuegia. The species is not found elsewhere in S. America, nor in N. America save in the Arctic regions and in the Mountains of Colorado. Thus it has passed a gap of many thousands of miles to reach the two stations of Magellan and the Falklands."

2. ANDROSACE Linn.

Low herbs, with tufted, basal *leaves*, and terminal, *involucrate*, simple umbels of small, white or yellow *flowers*. *Calyx* 5-lobed; *stamens* inserted in the very short corolla-tube; filaments and anthers short. *Stigma* capitellate. *Capsule* 5-valved.

Species 50, chiefly European. (Figs. E, F, in Eng. & Prantl, iv, 1, p. 109.)

1. A. OCCIDENTALIS Pursh.

Minutely pubescent, 20 mm. high, with root 25 mm. long. Acaulescent, with slender root, and open rosulate circle of oblong-ovate or spatulate, sessile *leaves;* and naked scapes bearing each an involucrate umbel of small, white or pink *flowers*. *Calyx* persistent, obpyramidal, 5-carinate, its 5 lobes twice as long as the ripe capsule. *Corolla* small, hyaline, its lobes truncate, notched. Involucral bracts resembling the basal leaves.

(Mountains of Colorado to New Mexico); S. Patagon., at Coy Inlet, by J. B. Hatcher. There is a characteristic *yellow band* crossing the flowers on the dark-green involucre-leaves and the similarly colored calyx-segments. (G. M.)

2. A. SEPTENTRIONALIS Linn.

Stemless. *Leaves* rosulate, lance-ovate, denticulate, subciliate, variously entire or toothed or pinnatifid, sometimes narrowing to a winged petiole. Scapes numerous, each many-flowered, the young pilose, afterwards glabrous. *Involucre* minute, its bracts lanceolate, acute. *Pedicels* long, filiform. Calyx campanulate, scarcely 5-cleft, with acuminate segments. *Corolla* limb small, just exceeding the calyx, its lobes obtuse.

(Eurasia, mountains and Arctic; N. Amer., Arctic and North-west); S. Patagon., by Golfo de San Jorge.

3. SAMOLUS Linn. Brook-weed.

Glabrous perennials, with entire, alternate or rosulate *leaves*, and small white or purplish, perigynous *flowers*, mostly racemed. *Stamens* nearly always with 5 intermediate rudiments.

Species 10, widely distributed, especially in S. Africa and Australia; few in N. Amer., W. Indies, S. Amer. and N. Zeal. *S. valerandi* Linn., is almost cosmopolitan in temperate climates.

1. S. LITTORALIS Brown.

Stem branching, the branches procumbent, leafy. *Leaves* spatulate-ovate to lance-linear, decreasing upwards, submucronate, entire, the lower slightly petioled. *Flowers* axillary at the ends of the branches; pedicels bractless, inflexed, twice as long as the leaf. *Calyx* half as long as the corolla, its segments narrow, acuminate.

(Austral., New Zeal.; Chili; Chonos Archip.); Patagon., Cape Tres Montes.

2. S. SPATHULATUS (Cav.) Duby. (Plate XXI.)

Leaves radical, rosulate, spatulate, terminally very broad and obtuse, or nearly obcordate. *Flowers* racemose, with a linear, acute bractlet close to each flower. *Corolla* twice as long as the calyx. *Staminal* rudiments subulate, shorter than the included stamens.

S. Patagon., by Puerto Deseado, in moist localities; at Gregory Bay; by Hatcher in Valley of Rio Sta. Cruz, flowering Jan. 10. Fuegia.

4. LYSIMACHIA Linn. Loosestrife.

Erect or creeping herbs, with opposite or alternate or whorled leaves, and axillary or terminal inflorescences. *Calyx* and *corolla* 5–6-partite, hypogynous. *Stamens* 5–6, on base of corolla-tube, the filaments bearded and often uniting below, and anthers obtuse; sometimes with staminodes. *Capsule* subglobular, not circumscissile. Style filiform, with obtuse stigma. Seeds few or many, half-anatropous.

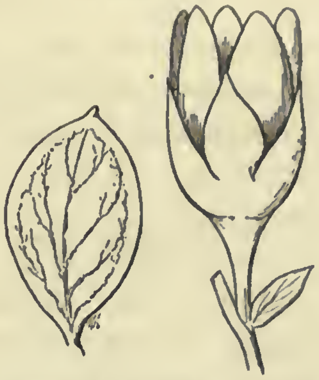
Species 60, chiefly in temperate regions; some in Australia, S. Amer., and Polynesia.

1. L. MARGINATA n. s. (Fig. 84.)

Dwarf annual, with long, filiform *roots* and short *stems*, bearing alternate subsessile, entire, elliptical, glabrous *leaves*, 5 by 4 mm., subcuspidate, the leaf-nerves branching from the midrib, and reuniting submarginally, so as to produce a veinless margin, ½ mm. broad. *Flowers* solitary in the axils, on short pedicels; *sepals* ovate-lanceolate, pale-greenish, imbricate; *petals* larger, 7-veined, pinkish. *Stamens* 5, inserted on base of petals, cohering in a column half-way up, antipetalous, anthers connivent. *Filaments* with yellow-stalked glands at base. *Ovary* superior, globular; *style* 1, 3 mm. long, unbranched, truncated. *Ovules* numerous, on free central placenta.

S. Patagon., by J. B. Hatcher.

FIG. 84.



Lysimachia marginata.—Leaf and flower, × 12.

5. ASTEROLINUM Link. & Hoffmans.

Small annuals with opposite leaves, and minute flowers, solitary on axillary peduncles. Calyx-segments awned-mucronate, exceeding the convolute corolla-lobes. *Capsule* globose, valved. Seeds few. Species 5, Mediterranean Region and South America.

A. SERPYLLIFOLIUM (Poir) Ball.

Stem erect, much branching. *Leaves* lanceolate, acute. *Peduncles* shorter than the leaves.

(S. Europe, Argentine); N. and S. Patagon.

6. ANAGALLIS Linn. Weather-glass.

Branching, mostly glabrous herbs, with mostly opposite, sessile or subsessile, entire or subentire *leaves*, and small, axillary, peduncled 5-merous *flowers*. *Corolla* rotate, exceeding the calyx. *Capsule* globose, circumscissile

Species 15, Eurasian; 1 introduced to N. Amer.

1. A. ALTERNIFOLIA Cav.

Stem stoloniferous, creeping, much branching, leafy. *Leaves* alternate, thick, ovate-lanceolate, attenuate both ways, glabrous, acute or mucronate, crowded, sessile, or the lower subpetiolate. *Peduncles* slender, erect, as long as the leaves. Corolline-segments lanceolate, obtuse, twice as long as the calyx. *Filaments* bearded below. *Capsule* half as long as the calyx.

(Chili); Chubut, swampy meadows; Staaten Is.

ANAGALLIS ALTERNIFOLIA DENSIFOLIA.

Leaves and stem smaller and more crowded than in the species. More succulent. *Capsule* larger.

Magellan, Staaten Is.; Falklands.

Family 86. PLUMBAGINACEÆ. Leadwort Family.

Herbs, with regular 5-merous, sympetalous or choripetalous *flowers; stamens* equal and opposite to the lobes of the corolla; *ovary* superior, 1-celled, 5–3-styled. *Fruit* with one pendulous *seed* on a long funicle arising from the base. *Seed* endospermous.

The priorities compel us, following Britton & Brown, to include under the genus *Statice* forms with unbranched scapes, hairy styles and narrow leaves, reducing *Armeria* to its original status as a specific name; and *Limonium* as a genus will include the forms with branched scape, smooth styles, and broad leaves.

1. STATICE Linn., 1753. (*Armeria* W., 1809, in Gray's *Manual*, in Benth. & Hook, and in Eng. & Prantl.) *Seapink*, Thrift.

Tufted, fleshy herbs, with slender, mostly naked, simple *scapes*, with narrow, basal, rosulate *leaves*, and dense, terminal *heads* of small, subsessile *flowers*, having scarious *bracts* and *bractlets;* the lower bracts forming an *involucre*, 2 of them reflexed and partly united. *Calyx* funnelform, 10-ribbed, 5-toothed. *Petals* 5, separate or connate. *Stamens* on the base of the petals. *Styles* filiform, hairy, united below. *Utricle* 5-pointed.

Species 20, Europe, and around the Mediterr. and N. and S. Amer.

1. S. ARMERIA Linn. (*Armeria vulgaris* W., *A. andina* Poepp.)

Glabrous. The *root* sending up few, very turgid, leafy-sheathed rosules; *leaves* fleshy, linear, as broad as the scape, or broader, plane, obtuse, 1-nerved. *Scapes* tall, thick. *Involucral leaves* broad, black, the lowest triangular-lanceolate, acute often equalling the inner, which are obtuse and broadly margined.

(Calif. and higher Chilian Andes); Magellan., Port Famine; S. Patagon. by J. B. Hatcher at Rio Sta. Cruz, Dec. 30, 1896 (the involucral leaves light brown); by O. A. Peterson at Rio Coy, Dec. 13.

2. STATICE BELLA (Alboff. sub *Armeria*).

Cespitose, 5–10 cm. high. *Rhizome* vertical, multicipital; the stem-bases amid dead leaves. *Leaves* narrower than the scape, 1-nerved, dilated at base, glabrous or subciliolate. *Scapes* low, one and one half as high as the leaves, pubescent. *Heads* elegant, red, variegated with gold and white. *Involucre* red, its outer bracts obtuse, inner bracts longer and gold-edged. *Calyx* obconical, pilose on nerves. *Corolla* segments lanceolate-spatulate or oblong. *Heads* spherical.

Fuegia, alpine above Ushuaia.

3. S. CHILENSIS (Boiss. sub *Armeria*). (*S. cespitosa* Poir.)

With many *heads;* sheaths of dead leaves crowding at base. *Leaves* linear-setaceous, narrower than the tall, slender *scape;* flexuose, 1-nerved, striate when dry, usually glabrous. *Involucral leaves* scarious, pale brown, the lowest narrow, acute.

(Chilian Mts.); Chubut; S. Patagon., by O. A. Peterson, on pampas by Coy Inlet, Nov. 13; by J. B. Hatcher at Cabo Negro, Jan. 13. (Non-puberulous.)

S. CHILENSIS MAGELLANICA (Boiss).

Puberulous.

Patagon., at mouth of Rio Chubut; valley of Rio Gallegos (Nordenskj.); W. Patagon., by Rio Aysen and Lago Nahuel-huapi (Dusén); Magellan; Fuegia to Cape Horn; Staaten Is. Most of the genus in the Magellan lands belong to this variety.

4. S. MACLOVIANA (Cham. sub *Armeria*).

Glabrous; the root producing a few leafy-sheathed *rosules*, *leaves* fleshy, linear, as broad as the scape, plane, obtuse, 1-nerved. *Scape* low, thickish, outer *involucral leaves* very broad, herbaceous, triangular-ovate; inner ones rounded, broad-scarious.

Falklands (referred to *Statice armeria* by Hooker f., which is unknown in Antarctic Amer.); S. Patagon., at Coy Inlet (Peterson); Killik Aike (B. Brown, Dec. 25, 1899.)

5 S. PATAGONICA (Phil.).

Cespitose. *Leaves* hirtellate, shorter and narrower than the rather long scape. *Involucral leaves* membranous, red; the lowest ovate, submucronate; the others generally orbicular, muticous. *Calyx-teeth* triangular, cuspidate; *calyx-ribs* long-hirsute.

Height 17 cm. *Leaves* to 8 cm. by 1 mm.

S. Patagon., by Bahia Grande.

2. LIMONIUM Adans., 1763. (*Statice* Willd., 1798, and Benth. & Hook, etc.)

Herbs, mostly with flat, basal *leaves;* and minute *flowers* in 1–3-flowered, bracted *spikelets*, arranged in paniculate, 1-sided, branching scapes. *Calyx* usually 10-ribbed, 5-toothed. *Petals* 5, clawed; *stamens* adnate to their base. *Fruit* indehiscent, or with a lid, or dehiscing irregularly. *Styles* distinct; *stigma* bare.

Species 120, cosmopolitan.

1. L. BRASILIENSE (Boiss. sub *Statice*) O. Ktze.

Glabrous *Leaves* oblong, 1-nerved, obtuse or retuse, attenuate-petiolate. *Scape* tall, fistular, paniculately branching. *Bracts* red-margined, carinate, mucronate.

(S. Brazil.)

L. BRASILIENSE ANTARCTICUM Boiss.

Low and corymbose; *bracts* shorter than in the normal species, obtuse.

N. Patagon., in salt-marshes. "Guaicuru" of the natives who make from its roots a red decoction, using it as medicine for the blood. (J. Ball.)

2. L. PATAGONICUM (Speg. sub *Statice*).

Perennial, with a woody caudex. *Leaves* lanceolate or obovate, long-petiolate, thickish. *Scapes* terete below, simple, corymbosely branching above, 15–20 cm. high. Branchlets slender, straight. *Spikelets* 2-flowered, 1–2 cm. long, lax, shorter than the broad, membranaceous, lower bracts. *Calyx-tube* with 5 hispid ribs; its limb pale-lilac.

Patagon., salt marshes by Rio Sta. Cruz and Rio Salado, near San Julien.

Family 87. SAPOTACEÆ.

Trees and shrubs, with *milky juice* and usually alternate, exstipulate, petiolate, simple, entire *leaves*, pinnately-veined; and rather small, axillary, hermaphrodite, regular *flowers*. *Calyx* 2+2, or 3+3-merous, imbricate, slightly connate. *Corolla* sympetalous, hypogynous, its lobes as many as of the calyx, imbricating, often appendaged. *Stamens* 2–3-whorled, inserted on the corolla-tube, the outer whorl often more or less abortive, or wanting. *Ovary* with as many cells as the corolla-lobes, each *1-seeded*. *Fruit* usually a berry.

Species 325, chiefly in tropical countries (including *Guttaperçha*, the *Cow-tree*, and others of economic interest).

POUTERIA Aublet.

Trees or shrubs, with often short-petioled, small, fascicled *leaves*, the nerves curving inside the margin. *Calyx-leaves* 2+2, decussate. *Corolla* with 4 rounded lobes and a tube twice their length. *Stamens* 4, inserted in the corolla-tube, opposite the corolla lobes; and also intermediate oblong staminodes. *Ovary* hairy, 4–2-celled, with simple style, becoming a hairy or glabrous capsule.

P. SPLENDENS (DC. sub *Lucuma*).

Leaves nearly opposite, or alternate, elliptical, obtuse at both ends, edges revolute, upper surface glabrous, lower silky. *Pedicels* as long as the petioles, exceeding the flowers. *Calyx-leaves* rusty-velvety, the outer pair broader. *Cetera desunt.*

Patagon.

Family 88. OLEACEÆ. Olive Family.

Usually shrubs or trees, with opposite, exstipulate *leaves* (pinnate or simple); and regular, sympetalous, 4-merous, rarely 5–6-merous, *flowers* (sometimes apetalous); with 2 epipetalous *stamens* and a superior, 2-celled, mostly *few-seeded ovary*. *Seeds* usually with endosperm.

Species 500, widely distributed in trop. and temp. regions.

MENODORA Humb. & Bonp.

Herbs or undershrubs, with calyx 5–15-lobed; *corolla* broad, 5–6-lobed, and ovary on a fleshy gynobase, becoming a circumscissile *capsule*. *Stamens* 2, rarely 3. *Placentæ* on septum.

Species 15, N. W. Amer. southwards through Mex. and the Andes; 2 sp. in S. Africa. (Fig. in Eng. and Prantl, iv, 2, p. 15.)

1. MENODORA ROBUSTA (Benth.) A. Gray.

Calyx 5–6 lobed, its lobes triangular, half as long as the tube. *Corolla* campanulate or funnelform, lobes acutish. *Filaments* filiform, as long as the corolla; *anthers* muticous. *Cells* of fruit 2-seeded.

Patagon., at Rawson. "A low, half-meter high, very dense, branching and spinose, almost leafless weed; with abundant bright yellow flowers." (Dusén.)

2. M. TRIFIDA Cham. & Schl.

Leaves linear; trisect-pinnatifid or most of them entire; their margin and the angles of the slender branches scabrid. *Flowers* rather rare, capsule scarcely exceeding the height of the calyx, circumscissile.

(Brazil; Argentina); N. Patagon.; near Rio Negro.

Family 89. LOGANIACEÆ.

Herbs, shrubs or trees, with opposite, entire, stipulate *leaves* (or with a *stipular* membrane or line); and 4–5-merous, sympetalous *flowers*, *stamens* as many as and alternate with the corolla-lobes, epipetalous; *ovary* superior, 2- (rarely 3–5-) celled; *style* 1, *stigmas* distinct, or united below. *Seeds* several; with large *endosperm*.

Species 400, chiefly in warm countries.

KEY TO THE GENERA.

1. Fruit a septicidal capsule. Cymes dense or globose. Plants stellately-tomentose. 1. *Buddleia*, p. 658.
2. Fruit a berry. Flowers large, solitary. Glabrous, with spiny-toothed leaves. 2. *Desfontainea*, p. 659.

1. BUDDLEIA Linn. (*Buddlea.*)

Mostly *stellate-tomentose* trees or shrubs, with axillary or terminal *cymes* or *heads* of 4-merous *flowers*. *Capsule* septicidally 2-valved.

Species 70, chiefly in S. Amer.; some in S. Afr. and S. Asia. (Figs. in Eng. & Prantl, iv, 2, p. 47.)

1. B. GLOBOSA Lam.

Shrub 3 m. high, rusty tomentose, with shortly petioled *leaves*, 8–10 cm. long, lanceolate to ovate-lanceolate, acute, crenulate, basally narrowed, upper surface glabrous, rugose. *Heads* globose, orange, as large as a cherry, densely many-flowered, in long-peduncled, terminal racemes.

(Chilian Andes); Patagon., Chubut.

2. BUDDLEIA INTERMEDIA Lorentz.

Tomentum rusty. *Branches* tetragonal. *Leaves* oblong, acuminate both ways, serrate, pilose above. *Inflorescence* terminal; its branches short, spreading; glomerules sessile.

(Mexico); N. Patagon., by Rio Negro.

3. B. LUCÆ Nied.

Shrub, with many small, densely intricate branches. *Leaves* numerous, decussate; oblong or lanceolate or elliptical, entire; small, to 14 mm. long by 2–4 mm. broad; stellately hairy on midrib below. *Flowers* 1–3, in axils. Cetera?

N. Patagon., by Rio Negro.

4. B. NAPPII Lorentz.

Shrub nearly 2 meters high. With globose *heads*, each on the apex of a long *peduncle*. *Leaves* white-woolly on both surfaces; crowded chiefly at the apex of the branches; lanceolate, alternate near the apex; entire or subcrenate, sessile; large, 5 by 1 cm. Wool of 4-rayed stellate hairs.

N. Patagon., near Rio Negro.

2. DESFONTAINEA Ruiz & Pav.

Glabrous shrub, with spinose-toothed *leaves*, as of Holly, and showy-pink, peduncled *flowers*, solitary at the ends of the branches, or in dichotomies. *Seeds* numerous, on axile *placentæ; fruit* a berry.

The only species.

D. SPINOZA Ruiz & Pav.

Flowers tubular, scarlet (often pierced by a species of insect *Bombus*).

(Andes from new Granada southwards); E. and W. Magellan; Desolation I., at Puerto Angosto; Staaten I. (Fig. A–C in Eng. & Prantl, iv, 2, p. 49. A puzzling form, referred by botanists to various families.)

Family 90. GENTIANACEÆ. Gentian Family.

Glabrous herbs, with opposite, rarely alternate, or whorled, entire, *exstipulate leaves*, and variously cymose, 4–5-merous, sympetalous *flowers; stamens* as many as, and alternate with the corolline divisions, epipetalous. *Ovary* superior, 1- (or partly 2-) celled, with 2 *placentæ*, and many endospermous seeds.

Species 600, chiefly of temperate regions.

KEY TO THE GENERA.

1. Flowers not large, cymose or spicate. Calyx-lobes narrow, long. Corolla salverform. Anthers twisting when old. Style filiform. 1. *Erythræa* p. 660.
2. Flowers rather large. Calyx-lobes not divided half-way. Corolla funnel- to bell-form. Anthers straight. Style short, persisting. 2. *Gentiana* p. 660.

1. ERYTHRÆA Neck. Centaury.

Flowers small or mid-sized, numerous in cymes or spikes. *Calyx-lobes* narrow, long. *Corolla* salverform, pink to yellowish. *Anthers* twisting when old. *Style* filiform, deciduous.

Species 25; in Eurasia, and W. of America.

E. CHILENSIS Pers.

Stem slender, ascending or erect. *Leaves* various; the lower oblong, more or less long, acute; the upper linear, narrowed both ways, obtusish. *Panicle* frequently dichotomous, lax. *Flowers* long pediceled, remote from the leaves. *Corolla* 5–4-cleft, its tube as long as the calyx; its lobes elliptic, oblong, obtuse. Capsule 1-celled.

(Common in Chili, in grassy places; and near Buenos Aires); probably in N. Patagon.

2. GENTIANA Linn. Gentian.

Erect, with *calyx* 5-, rarely 4-cleft, not divided down to the middle; *corolla* tubular to funnelform, occasionally with extra lobes in the angles. *Anthers* remaining straight. *Style* usually short and persisting. Flowers mostly blue or purple to white; rarely yellow.

Species 300, cosmopolitan, abounding in mountains of the N. Temperate zone and on the Andes; also in the Arctic regions, in South Australia, Tasmania, and New Zealand and Patagonia.

The American species belong chiefly to the section *Gentianella*, which has sepals imbricately connate below, without intracalycine membrane; calyx-tube not unilaterally divided; corolla with 1–2 nectaries for each petal, often fringed at its throat, and with 5–7–9 veins for each petal.

1. GENTIANA MAGELLANICA Gaud.

Stem rather strict, sparsely branching, angled. *Cyme* lax, corymb-like. *Leaves* subcoriaceous, oblong-spatulate, margin rough, upper leaves acutish, lower obtuse. *Calyx* deeply 4-cleft, its lobes ovate, acute, nearly equaling the corolla. *Corolla-lobes* 4, oblong, obtuse, erect.

S. Patagon., by Rivers Gallegos and Sta. Cruz.; Magellan, annual in S. Fuegia and Falklands.

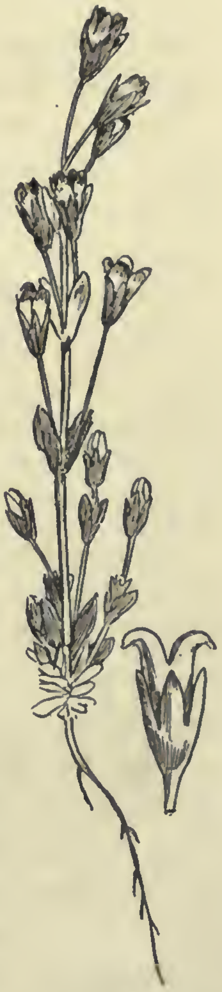
2. G. PATAGONICA Griseb.

Stem rather strict, branching, angled. *Cymes* lax, racemiform. *Leaves* subcoriaceous, elliptic-oblong and spatulate-obtuse, margin smooth. *Calyx* 4-cleft, its lobes ovate, acute, half as long as the corolla-lobes. *Corolla* blue? slender, salverform; its lobes ovate-oblong, subacute, equalling the tube. (Fig. 85.)

Magellan; Fuegia, passim.; in steppes by the moderate rainy-forest region. S. Patagon., by Hatcher in low, wet ground near Rio Sta. Cruz, Jan. 9. The flowers of the Hatcher forms are yellowish-purple, and 4- and 5-merous in the same inflorescence. A more slender form, got by Hatcher on the Cordilleras of S. Patagon., has the corolla narrower, and the stems more sharply angled (see var. *gracilis* below).

"I cannot distinguish *G. patagonica* and *G. magellanica;* an opinion which Grisebach seems to have held." (Franchet.)

FIG. 85.



Gentiana patagonica. — Flower, nearly natural size, and magnified fruit. (From *Flora antarctica.*)

"*G. patagonica* differs from the Tasmanian and New Zealand *G. montana* Forst., only by rather broader and more obtuse segments of the less deeply divided calyx." (J. D. Hooker.)

GENTIANA PATAGONICA DARWINII Griseb.

Corolla rotate, 5-partite.

Magellan, J. D. Hooker can hardly consider it even a variety.

G. PATAGONICA GRACILIS Alboff.

More *slender*, less branching, with membranaceous *leaves;* few- to 1-flowered, low.

Patagon.; E. and S. Fuegia, Valley of Olivaia; Navarin I.; "Also a low, 1-flowered form, scarcely 6 cm. high," at Olivaia.

3. G. PROSTRATA Haenke.

Annual. Stem loosely branching at the base. *Branches* 1-flowered. *Leaves* oval-spatulate, recurved-obtuse, muticous, smooth-margined. *Calyx-teeth* 5, erect, ovate-lanceolate, acutish, shorter than the slightly enlarged corolla-tube. *Corolla* blue, its tube twice as long as its ovate lobes; its folds often half as long as the lobes. *Style* short. *Capsule* oblong, rounded above the basal stipe.

(Mountains of Eurasia; Arctic regions and Rocky Mts.); Magellan. Sometimes very small, 12 mm. high to 20 cm.; in S. part of the Fuegian steppe. (Dusén.)

"A most extraordinary range; in Southern Europe the Carinthian Alps, 6,000–7,000 feet high; in Asia on the Altai Mts., N. Lat. 52°; in the Rocky Mts. at 52° N., to the height of 15,000–16,000 feet; on the East side of the Andes of South America at 35° S.; and at Sea-level at Cape Negro and Magellan; and in Behring Strait, Lat. 68½° N." (J. D. Hooker.)

4. G. SEDIFOLIA H. B. & K.

Perennial. *Stems* cespitose, subramose, the fertile 1-flowered. *Leaves* lanceolate, acute, muticous, the margin smooth, equal. *Flowers* 5-merous. *Calyx-leaves* lanceolate, acuminate, equalling the gradually enlarging corolla-tube. *Corolla* funnel-form, blue, its lobes oblong, half as long as its tube, its folds rounded equalling the lobes. *Capsule* ovate-oblong, stipitate.

Andes of Peru, above 1,000 meters elevation.

G. SEDIFOLIA MICRANTHA Wedd.

S. Fuegia, Ushuaia.

Family 91. APOCYNACEÆ. Dogbane Family.

Plants usually with *milky juice*, simple *exstipulate leaves*, and regular 5-merous, sympetalous *flowers* with inferior perianth, and 5 epipetalous *stamens*, alternating with the corolline divisions. *Ovary*, of 2 distinct carpels, or syncarpous and 2–1-celled. *Fruit* of 2 follicles or drupes. *Seeds* often comose, with sparing endosperm.

Species exceeding 1,000, chiefly tropical.

GRISEBACHIELLA Lorentz.

Flowers axillary, solitary. *Calyx* hard, thick, persistent, deeply 5-partite, the parts connate at base, concave, obtuse, externally pubescent or subglabrous. *Glands* in base of calyx lobes.

G. HIERONYMI Lorentz.

Woody shrub, scarcely 1 meter high; branching, flexuose or angulose, old branches glabrous, terete. *Leaves* decussate, ovate, acuminate, 1-nerved, acute, glabrous, rigid, coriaceous, yellow-green, caducous, 12 by 6 mm. *Petiole* 2 mm. *Flowers* very small, on a very short peduncle, with a minute *bract*, deflexed.

N. Patagon. (Roca Expedition to Rio Negro. Quid? Eng. & Prantl, iv, 2, 189).

Family 92. ASCLEPIADACEÆ. Milkweed Family.

Herbs or shrubs, with milky juice, and mostly opposite, exstipulate *leaves*. *Flowers* 5-merous, regular, sympetalous, with a 5-parted crown inside the corolla. *Stamens* 5, epipetalous, and alternating with the corolline divisions; *anthers* connivent around discoid, united stigmas, or synantherous; the *pollen* cohering in waxy masses. *Ovary* superior, with 2 carpels and styles, united by the *stigma*. *Seeds* plumose; with scanty *endosperm*.

Species nearly 2,000, widely distributed, especially in warm climates.

KEY TO THE GENERA.

(The Patagonian genera all have the pollen in 2 wax-like masses, hanging by transfer-organs.)

A. Crown none. Corolla divided more than half-way. Stigma elongating to 2 filiform branches. 1. *Mitostigma*, p. 664.

*A*2. Crown ringform, fastened to the throat of the rotate or campanulate corolla. Gynostegium subsessile. Corolla smooth inside. Shrubs or half shrubs. 2. *Turrigera*, p. 664.

*A*3. Crown fastened on the gynostegium, its tips free, or only basally united. Corolla valvate in the bud.

b. Corolla-tips valvate. Crown-tips cap-like, not spurred, but with horns in the caps. Transfer-organs small. Upright weeds. 3. *Asclepias*, p. 664.

*b*2. Corolla-tips imbricating towards the right. Crown-tips flat. Stigma conical, rostrate, 2-partite. Flowers not exceeding 1 cm. in diameter. Winding shrubs or half shrubs. 4. *Melinia*, p. 665.

1. MITOSTIGMA Dcne.

Tomentose, fruticulose plants, with winding *branches* and large, cordate *leaves*, with mid-sized *flowers* in branching, unilateral cymes. *Calyx-leaves* small, acute, with alternate glands. Pollen masses pendulous. *Corolla* rotate-campanulate, its small lobes often hairy internally. *Crown* none. Gynostegium (hood) small; *stigma* flat, with 2 styliform branches. *Follicles* thick, pointed, woolly.

Species 4, Argentina. (Fig. in Eng. & Prantl, iv, 2, p. 223, K.)

M. CORDIFOLIUM (Phil. sub *Astephanus*) Fourn.

Stem twining, hollow, puberulous. *Leaves* deeply cordate-ovate, acute, 3 by 2 cm., with petioles 1 cm. long. *Peduncles* axillary, subumbellately 2–4-flowered. *Corolla* whitish, subrotate, 1 cm. diam., externally hairy.

Chili and Patagon.

2. TURRIGERA Dcne.

Twining, hairy undershrubs, with small or mid-sized *flowers* in an axillary, racemose *cyme*. *Calyx* 5-partite, the divisions acute. *Corolla* 5-lobed, the lobes dextrorsely overlapping. *Crown* campanulate, affixed on top of the corolla-tube, 5 or 10-lobed. One *pollen-mass* in each pollen-sac. *Stigma* long-rostrate.

Species 2, in extra-tropical S. Amer., viz.:

T. INCONSPICUA Dcne.

Leaves linear, glabrous, subsessile. *Peduncles* very short, 3–4-flowered. *Crown* 10-lobed.

(S. Brazil); Patagon., by Golfò de San Jorge.

T. LESSONII K. Sch.

Crown 5-lobed. Chili.

3. ASCLEPIAS Linn.

Leaves entire; *flowers* in axillary or terminal umbels. *Corona* of 5 concave hoods, each enclosing an incurved horn. *Pollen-masses* pendulous on caulicles. *Follicles* thick, acuminate. Seeds comose.

Species 85, mostly American.

ASCLEPIAS CAMPESTRIS Dcne.

Roots fibrous; *stem* simple or branching, flexuose, bifariously pubescent, compressed. *Leaves* oval or elliptic-ovate, acute, short-petioled, glabrate. *Peduncles* extra-axillary, short, with pubescent pedicels in many-flowered umbels. *Corolla-segments* ovate-acute; *hoods* ovate-oblong, with rounded margins and acute, falciform processes.

(Brazil); N. Patagon., by Rio Negro.

4. MELINIA Dcne.

Twining undershrubs, with opposite, cordate *leaves*, and small *flowers* in a few-flowered, peduncled, axillary *umbel*. *Crown-scales* short; broad. *Stigma* long, rostrate. *Follicles* acuminate from a dilated base. *Seeds* comose.

Species 5, in eastern extra-tropical S. Amer.

M. CANDOLLEANA (Hook. & Arn., sub *Brachylepis*) DC.

Twining, pubescent. *Leaves* cordate, acute, deeply 2-lobed at base, membranaceous. *Peduncles* longer than leaves, corymbose, few-flowered (4–6). *Flowers* small, apparently ochroleucous. *Lobes* of crown without a ligular appendage.

(Entrerios); Patagon., flowering late in the season (Ap.–May); by Rio Sta. Cruz.

Family 93. CONVOLVULACEÆ. Convolvulus Family.

Usually twining herbs, with alternate, exstipulate *leaves*, and regular, sympetalous, axillary *flowers*, mostly showy, with 5 epipetalous *stamens*, and normally 2–3 celled, superior *ovary*; *cells* 2-ovuled. *Seeds* endospermous, with crumpled embryo.

Species 900, cosmopolitan.

KEY TO THE GENERA.

a. Ovary partite, of 2 dry, 1-seeded mericarps. Styles 2, basal from the center. Calyx free. Small, low or creeping herbs, with broad, petiolate leaves. 1. *Dichondra*, p. 666.

*a*2. Ovary entire. Style 1, sometimes 2-parted, or styles 2.

  b. Stigma entire, capitate, or slightly lobed. Corolla salverform. Ovary 1–2-celled, 2-seeded. Calyx-leaves subequal, connate. Capsule ripening above ground, dehiscent. Upright or low, with fleshy leaves and solitary flowers. 2. *Wilsonia*, p. 666.

b2. Style 2-branched, with filiform stigmas. Ovary 1–2-celled, cells 1-seeded.
3. *Evolvulus*, p. 666.

b3. Style undivided to the stigma. Fruit capsular, dehiscent, with thin or hard pericarp. Calyx-leaves separate, often unequal. Flowers large. Bracts small, not close to the calyx. 4. *Convolvulus*, p. 667.

b4. As *Convolvulus*, but stigma 2-lobed; ovary 1-celled, with 4 seeds. Calyx enclosed by 2 large bracts. *Calystegia*, subgenus of *Convolvulus*, p. 667.

1. DICHONDRA Forst.

Slender, prostrate, with reniform, petioled, often small *leaves*, and small *flowers*, solitary on the pedicels. *Sepals* spatulate. *Corolla* campanulate, 5-cleft. *Ovary* with 2 distinct lobes, each 2-celled, usually villous. *Styles* 2, between the lobes, *stigmas* capitate.

Species 5, in warm climates. (Fig. in Eng. & Prantl, iv, 3*a*, p. 13.)

D. sericea Sw.

Leaves silky underneath. *Stem* rooting at the nodes.

N. Patagon., near Rio Negro.

2. WILSONIA R. Br.

Small, prostrate, much branching, smooth or silky; *leaves* small, crowded, sessile, rather fleshy. *Flowers* small, sessile, solitary. *Calyx* tubular-campanulate, with short lobes. *Corolla* somewhat salver-shaped. *Stamens* usually exserted. *Capsule* 1–2-celled, 1–2-seeded. *Style* filiform, 2-branched; *stigmas* capitate.

(Figs. A–C, in Eng. & Prantl, iv, 3*a*, p. 15.)

Species 4, Australia, with the following:

W. humilis R. Br.

Leaves very closely imbricating, distichous, ovate, silky. *Corolla-tube* scarcely exceeding the calyx.

(Austral.); S. Patagon., Puerto Madryn. (Dusén.)

(*Frankenia cymbifolia* of Hooker, "errore," Benth. & Hook, ii, 881.)

3. EVOLVULUS Linn.

Erect or prostrate, not twining, often silky or hairy, with small or narrow *leaves* and rather small *flowers*. *Ovary* 2–1-celled, 4-seeded. *Styles* 2, distinct, each *2-cleft*.

Species 80, in warm parts of both worlds.

1. EVOLVULUS FALCATUS Griseb.

Low undershrub, many-stemmed, 10 cm. high, leafy, silvery. *Leaves* subsessile, elliptical-lanceolate, falcate, acuminate (or the lower elliptic). *Pedicels* axillary, very short, 1-flowered. *Flowers* blue, half as long as the leaf. *Sepals* ovate-lanceolate, acuminate, half as long as the corolla.

(Argentina); N. Patagon., by Rio Negro.

2. E. INCANUS Pers.

Cespitose, procumbent perennial, scarcely 30 cm. long. *Leaves* ovate-oblong, crowded, mucronulate, silky on both sides, sessile, 6–8 mm. long. *Peduncles* 4 mm. long, 1-flowered. *Sepals* linear, 2.5 mm. long, silky. *Corolla* tubular, 5 times as long as calyx.

(Brazil); Patagon., by Golfo de San Jorge.

4. CONVOLVULUS Linn. p. p. (*Calystegia* R. Br., as a separate genus.) Bindweed.

Ovary 1–2-celled, 4-seeded. *Stigmas* 2. *Bracts* 2, close to the calyx, or none.

Species 7–8, in temperate and subtropical regions.

C. SEPIUM L. (*Calystegia sepium* R. Br.)

Stem twining, angled. *Leaves* large, sagittate, acuminate, glabrous, petiolate. *Peduncles* angular, 1-flowered. *Corolla* campanulate, 5 cm. long, often snowy. *Bracts* large, close to the calyx.

(Eurasia; E. United States; Australia to New Zeal.); W. Patagon., Chonos Archip.

Family 94. POLEMONIACEÆ. Phlox Family.

Herbs, with alternate, exstipulate *leaves* (or lower leaves opposite), and regular, 5-merous, sympetalous *flowers*. *Stamens* 5, alternate with the corolla-lobes, and inserted on the tube, often protruding. *Ovary* superior, 3-celled, with simple, 3-cleft style. *Fruit* capsular; *seeds* sometimes winged, sometimes covered with mucilage, and emitting spiral tubes when wetted; with *endosperm*.

Species 200, most in W. Amer., a few in temperate Eurasia.

KEY TO THE GENERA.

A. Stamens inserted at unequal heights.
  b. Seeds without mucilage. Stamens included. Corolla-tube narrow, salverform. Leaves entire, opposite. 1. *Phlox*, p. 668.
  b2. Seeds with mucilage. Filaments often exsert, erect. Corolla-tube wide-mouthed. Leaves incised or divided, alternate. 2. *Collomia*, p. 668.
A2. Stamens mostly inserted at equal heights.
  b. Filaments straight, not hairy at base. Leaves incised or partite, alternate or opposite. Corolla funnelform to tubular. 3. *Gilia*, p. 670.
  b2. Filaments declined, hairy at base. Leaves pinnate, alternate. Corolla usually funnelform, 5-lobed. 4. *Polemonium*, p. 672.

1. PHLOX Linn.

Erect or diffuse herbs, with opposite, entire *leaves* (or some above alternate), and rather large, purplish, etc., *flowers* in cymes or panicles. *Corolla-tube* narrow, its lobes obcordate, spreading. *Stamens* straight, short, unequal, included. *Ovary* 3-celled; the cells with 1–4 ovules. *Seeds* without spiral threads.

Species 30, N. Amer. and Siberia.

P. LINEARIS Cav. (1800. *P. biflora* Ruiz & Pav., *Collomia coccinea* Lehm.)

Erect annual. *Leaves* linear-lanceolate, the lower leaves opposite, the upper alternate, with paired axillary peduncles, the highest ovate-lanceolate, entire, or apically 3–4-cleft. *Heads* dense. *Calyx-lobes* lanceolate, obtuse. *Corolla* crimson, the throat dilated, twice as long as the calyx; its tube 4 times as long as the calyx. *Stamens* inserted low. *Capsule* 3-locular, 3-seeded.

(Chili); Patagon. (O. Ktze in naming this *P. biflora* appears to have overlooked its identity with Cavanille's plant.)

2. COLLOMIA Nutt.

Herbs, with alternate, mostly entire *leaves*, and purplish, capitate or cymose *flowers*. *Calyx* not distended or ruptured, accrescent in fruit. *Corolla-limb* spreading, its lobes obtuse. *Stamens* straight, unequal. *Seeds* mostly mucilaginous with spirals, *1–few* in the cells.

Species 10, W. North Amer. to Chili.

1. C. GRACILIS Dougl. (*Phlox morenonis* O. Ktze.)

Low, branching herb, with linear, obtuse *leaves*, the lowest obovate-oblong, opposite. *Calyx* tubular; its segments linear, as long as the corolla-tube. *Flowers* terminal, at length lateral on excurrent *branches.*

(Calif.); S. Patagon., at mouth of Rio Sta. Cruz (Dusén); Punta Arenas.

COLLOMIA GRACILIS MINUARTIOIDES.

Hispid all over. *Leaves* rigid, often arcuate, narrow-linear; *calyx-segments* hyaline-margined. *Capsule* ovate, shorter than the calyx.

Magellan.

("Distributed by Lechler as *Eutoca gracilis* Gris. and by Philippi as *Myotoca eritrichoides* Gris." Franchet.)

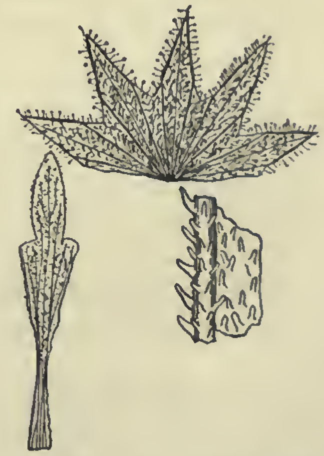
2. C. LINEARIS Nutt.

Viscid-pubescent; branching. *Leaves* sessile, entire or incised, the lower opposite. *Flowers* leafy-bracted. *Calyx* obconical; its lobes triangular-lanceolate, acute. *Corolla* salverform, 12 mm. long, lilac-purple to white, slender; its limb small.

(W. of N. Amer.); S. Patagon., near Rio Coy, by Peterson (Nov.); on Cordilleras, by Hatcher (flowering Feb. 25).

(Gray referred it to *Gilia* in Proc. Am. Ac., 1882; but returns to Nuttall's name in his *Gamopetalæ, 1886.*)

FIG. 86.



Collomia patagonica. Calyx; (on left) longitudinal section of corolla; (on right) recurved margin of cauline leaf, all magnified. (After Dusén.)

3. C. PATAGONICA Speg.

Minute annual, with filiform root, and short capitately folio-floriferous *stems,* all hispid-glandular. *Leaves* narrow-linear, entire. *Flowers* very small, subsessile. *Calyx* subcampanulate, its segments linear, 5 times as long as its tube. *Corolla* scarcely greater, pubescent, white, tubular, 5-toothed. (Fig. 86.)

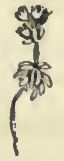
S. Patagon., by Rio Sta. Cruz. (Dusén refers to this species specimens with only the root-leaves hispid-glandular, but otherwise as described by Spegazzini). Rio Gallegos (Barnum Brown. Its lowest pair of leaves. (Cotyledons?), are broadly ovate and subtruncate, same length as the others, 7 mm., including petiole 1.5 mm. G. M.

4. Collomia pusilla Dusén. (Fig. 87.)

Small annual, with simple, slender, densely stellate hairy stem, leafy only at base; *leaves* rosulate, small, linear-lanceolate, subobtuse, glabrous, or with simple, marginal hairs or subciliate. *Flowers* crowded umbellately, with short, stellate-hispid pedicels. *Bracts* leaf-like, shorter than the basal leaves, crowded. *Calyx* companulate, pilose, half-way 5-cleft with linear-lanceolate segments, fleshy, acute, apically cartilaginous, exceeding the small *capsule.*

S. Patagon., by Rio Gallegos. (Nordenskjöld.)

Fig. 87.



Collomia pusilla, natural size (after Dusén).

3. GILIA Ruiz & Pav.

Herbs, with opposite or alternate, entire or variously segmented *leaves,* and small or large flowers. *Calyx* sinuses commonly scarious. *Stamens* straight, not hairy at the base. *Capsule* 3-celled, at length distending and rupturing the calyx. *Seed-coat* usually mucilaginous, often with spirals.

Species 75, America, most in western parts of N. & S. Amer.

Key to the Species.

A. Smooth.
  b. Stem leafless from the cotyledons to the involucre. Dwarf plant. Flowers white, pink, or yellow. *nudicaulis.*
  b2. Leaves pinnatisect, segments subulate, acute, spinescent upwards. Flowers white. *navarettia.*
  b3. Leaves 2–3-pinnatipartite. Flowers light blue. *achilleæfolia.*
A2. Pubescent when young. Leaves pinnatifid, toothed, the upper entire. Corolla white. *campanulata.*
A3. Stem hairy, few-leaved. Leaves pinnatifid or incised. Flowers white, with rose tinge, exceeded by the upper leaves. *polycladon.*
A4. Puberulous. Leaves pinnatisect. Flowers blue, corolla scarcely exceeding the calyx. *laciniata.*
A5. Woolly when young. Leaves alternate, pinnately divided. Corolla-tube long. *pumila.*

1. G. achilleæfolia Benth.

Stem slender, 30–60 cm. high, nearly glabrous. *Leaves* alternate, twice- or thrice-pinnatipartite, the ultimate lobes slender to filiform-linear. *Flowers* in capitate clusters on long peduncles. *Corolla* light-blue, 4–10 mm. long; its tube as long as its lobes, and as the calyx. *Stamens* inserted in its sinuses.

(Calif. and cultivated.) Patagon.?

2. GILIA CAMPANULATA Gray.

Annual. Minutely pubescent when young, diffusely branched and depressed. *Leaves* alternate, lanceolate, the lower sparingly pinnatifid-toothed, the upper small, entire. *Pedicels* not longer than the flowers. *Corolla* white, oblong-campanulate, twice as long as the calyx. *Stamens* inserted at the base. *Cells* of capsule 7-seeded.

(Nevada); S. Patagon., by Hatcher at Coy Inlet.

3. G. LACINIATA Ruiz & Pav. (*Polemonium laciniatum* O. Ktze.)

Annual. *Stem* erect, puberulous. *Leaves* pinnatisect; the divisions narrowly linear, entire or incised. *Cymes* irregularly 3–6-flowered, or occasionally 1-flowered. *Corollas* blue, scarcely exceeding the pubescent calyx-lobes; the *tube* half as long as the calyx.

(Chili); Patagon., at Rawson, near mouth of Rio Chubut. (Dusén.) ("*G. erecta* Hier. is scarcely more robust and not properly distinct from this." Speg.)

4. G. NAVARETTIA Steud. (*Navarettia involucrata* Ruiz & Pav.)

Low annuals, suberect or branching much from the base. *Leaves* glabrous, pinnatisect, their segments subulate, very acute, those of the upper and floral leaves spinescent. *Calyx* woolly, its segments incised, spinose like the bracts. *Corolla* white, its tube rather shorter than the calyx. *Stamens* exsert. *Cells* of ovary 2–3-seeded.

(Chili, etc.); Patagon., Chubut, in elevated meadows near Lago Fontana. "Specimens small, 4–5 cm. high and broad, with white corolla and teeth of bracts and calyx acerose, purpurascent." (Speg.)

5. G. NUDICAULIS Gray.

Glabrous. *Dwarf*, from 3 to 20 cm. high. *Stem* (or long internode) leafless from the cotyledons to the glomerulate involucre of leafy bracts. *Leaves* opposite. *Corolla-tube* 6–8 mm. long, thrice as long as the calyx; exceeding the corolla-lobes, which are white, pink or yellow. *Anthers* sessile in the throat. *Cells* of ovary 10–16-ovuled.

S. Patagon., by O. A. Peterson at Coy Inlet, Nov. 18. (Verified in Gray Herb.)

6. GILIA POLYCLADON Torr.

Low, branching from the base. *Stems* sparsely hairy, diffuse, very few-leaved. *Leaves* pinnatifid or incised; lobes short, oblong, spinulose-mucronulate, those subtending the cyme exceeding the flowers. *Flowers* cymulose-glomerate, or at length lax, leafy bracted, white with a rose tinge. *Corolla-tube* scarcely exceeding the awned-mucronate *calyx-lobes*. *Anthers* in the throat on very short filaments. *Cells* 2-seeded.

S. Patagon., by Hatcher, on pampas, near Coy Inlet.

7. G. PUMILA Nutt.

Annual. Branched at base; woolly at least when young, 7–20 cm. high. *Leaves* alternate, pinnately divided, their segments linear mucronulate or lobed. Cymes sessile. *Corolla-tube* thrice as long as its lobes, twice as long as the calyx. *Calyx-lobes* awn-like. *Seeds* 5–6 in each cell.

(Texas to Nebraska); S. Patagon., by Coy Inlet, Hatcher. (Verified in Gray Herb.)

4. POLEMONIUM Linn.

Mostly perennial, with alternate, often pinnate *leaves*, and large *flowers* often panicled. *Calyx* accrescent in fruit. *Corolla* mostly tubular-campanulate. *Stamens* equally inserted near its base and declined. *Capsule* ovoid. *Seeds* mucilaginous, with spirals.

Species 15, in cool regions of the northern hemisphere; also the following:

P. MICRANTHUM Benth. (*P. antarcticum* Griseb.)

Annual. *Dwarf*, diffuse, glandular-hairy. *Leaves* pinnatisect, the segments minute, ovate, subrotund to spatulate. *Flowers* remote, pediceled. *Calyx* 5-parted, lax, its segments ovate, obtuse, slightly exceeding the white corolla. *Corolla-lobes* broad, obovate, 3-lobed. *Filaments* glabrous, inserted at middle of the corolla-tube. *Cells* of ovary 2-ovuled; *seeds* ovoid, not winged.

"When crushed by the fingers this plant emits a musky fragrance." (Speg.)

(N. Amer.); S. Patagon., by Hatcher, near Coy Inlet, not yet in flower, Oct. 16; by Peterson in same place, in flower, Nov. 13; by Dusén at Rio Sta. Cruz, and in Brunswick Penins., W. Magellan. "The distinction between *P. micranthum* in N. Amer. as having 11 leaf-segments and long-pediceled flowers, and *P. antarcticum* of Chili-Patagonia as having 7 leaf-segments and subsessile flowers, is incorrect." (O. Ktze.)

Family 95. HYDROPHYLLACEÆ. Waterleaf Family.

Herbs mostly hairy, with regular, 5-merous sympetalous *flowers*, mostly in scorpioid inflorescences. *Stamens* 5, inserted on the corolla, alternating with its lobes, often protruding. *Ovary* superior, 2-celled, or 1-celled with 2 *placentæ*. *Styles* 2, partly separate. *Seeds* with endosperm.

Species 160, chiefly in western N. Amer.

KEY TO THE GENERA.

A. Style simple or 2-parted.

b. Placentæ broad, at first fleshy, afterwards leathery and enclosing the whole capsule. Æstivation mostly contorted. Capsule 1-celled. Stamens exserted. Leaves alternate. 1. *Hydrophyllum*, p. 673.

b2. Placentæ narrow, in the valves of the loculicidal capsule. Æstivation imbricate. Capsule 1–2-celled. Style deeply 2(–3)-parted. Calyx-leaves subequal. Stamens subequal, at same height. Plant often stiff-hairy, not prickly, lowest leaves opposite; upper alternate. Inflorescence scorpioid. 2. *Phacelia*, p. 674.

A2. Styles 2, distinct. Capsule more or less 2-celled. Æstivation imbricate. Placentæ parted, bounded by the septa with the valves. Corolla funnelform. Seeds several. Herbs or undershrubs. 3. *Nama*, p. 675.

1. HYDROPHYLLUM Linn. Waterleaf.

Leaves large, pinnately cut or divided. *Flowers* rather large, white to blue or purple. *Calyx* 5-partite. *Corolla* 5-lobed, the lobes convolute in the bud, with inner scales bending towards each other. *Anthers* versatile, exserted. *Ovary* 1-celled. *Placentæ* fleshy, central. *Styles* united. *Seeds* 1–4.

Species 6, N. Amer., and the following:

H. MAGELLANICUM Lam. (sub *Phacelia* O. Ktze.).

Hispid or hoary-tomentose, erect, with one to several *stems*. Lower *leaves* cespitose, crowded, oblong-lanceolate, entire or pinnatisect; the lobes 3–5, lanceolate; the terminal often greater.

Varieties at Magellan or other parts of Patagonia and Chili.

HYDROPHYLLUM MAGELLANICUM ACUTILOBUM.

White-pilose. Calyx-lobes acuminate.

H. MAGELLANICUM ALBIFLORUM (O. Ktze.).

Flowers white.

H. MAGELLANICUM OBTUSILOBUM.

Silky. Leaves with short pubescence. Calyx-lobes oblong, obtuse.

H. MAGELLANICUM PANICULATUM.

H. MAGELLANICUM PINNATUM (O. Ktze.).

2. PHACELIA Juss.

Mostly hirsute, with entire or variously cut *leaves*. *Calyx* 5-lobed, slightly enlarging in *fruit*. *Corolla-lobes* imbricated in the bud, sometimes with internal appendages. *Stamens* exserted or included. *Ovary* 1-celled, with 2 parietal *placentæ*. *Styles* united below. *Seeds* 4, usually reticulated.

Species 80, America.

1. P. ARTEMISIOIDES Gris.

Low, ascending, villous herb, to 12 cm. high. Leaves pinnatisect, segments 4 pairs, deeply pinnatified; their lobes briefly oblong, rounded. Flowers small, crowded in scorpioid cymes. Calyx-lobes rounded, obtuse, more than half as long as the funnelform corolla, whose ovate lobes are half as long as its tube. Stamens equalling the corolla. Style half way cleft. Capsule enclosed in the globose calyx.

(Argentina?); E. Patagon. (Dusén.)

2. P. BRACHYANTHA Benth.

Erect, 25 cm. high, pubescent. Leaves ovate, entire, undivided, or with 1–2 basal lobules. Corolla violaceous, scarcely exceeding the calyx. Stamens included.

(Chilian Mts.); S. Patagon., high up by Rio Sta. Cruz.

3. P. CIRCINATA Jacq.

Hispid, erect. Leaves entire or 3–5-pinnatisect, the lobes ovate, or oblong-acute, the terminal lobe large. Racemes dense-flowered, glomerately circinate. Calyx-lobes oblong, acute, erect. Corolla twice as long as the calyx. Stamens much exserted.

"Very variable; dwarf forms with a naked scape-like stem." (A. Gray.)

(Calif., Oregon, Mex.); S. Patagon., by Hatcher at head of Rio Chico de la Sta. Cruz; "blue to white." Feb. 9, 1897. S. and W. Patagon. and Lago Nahuel-huapi (Dusén). Fuegia, at Ushuaia.

PHACELIA GLANDULOSA Nutt.

Viscid-pubescent, to 30 cm. high. Leaves irregularly and interruptedly twice pinnatifid; or the lower divided. Lobes many, small, somewhat incised, obtuse. Calyx-lobes oblong, spatulate. Stamens exserted.

Western U. S.

P. GLANDULOSA PATAGONICA Ball.

"At Bahia Blanca and North Patagonian coast." (J. Ball.)

5. P. PINNATIFIDA Wedd.

Viscid-pubescent. *Stem* tall, branching above. *Leaves* pinnately lobed, the lobes ovate or oblong, obtuse, crenate, the terminal as the others. *Racemes* fascicled in apex of the branches, circinate, ultimately elongate. *Calyx-lobes* linear-spatulate, obtuse. *Corolla* longer, the folds or scales of its tube mostly ovate. *Stamens* exsert. *Capsule* shorter than calyx, *placentæ* dilated transversely. *Seeds* oblong.

(Peru, Bolivia.)

P. PINNATIFIDA PUMILA O. Ktze.

Dwarf to 10 cm. high.

Patagon.

3. NÁMA Linn.

Low herbs or from a woody base, *dichotomously branching* and hairy. *Leaves* alternate. *Flowers* rather small, solitary in the axils, or terminal and cymose. *Corolla* funnelform, imbricating. *Stamens* nearly included. *Ovary* 2-celled; *styles* 2; *stigmas* capitate. *Seeds* small, numerous, rugose.

Species 27, most in Western N. Amer. and Mex.; 1 each in Hawaiia and S. Amer.

N. DICHOTOMUM Ruiz & Pav.

Annual herb. Viscous-hairy. *Leaves* most of them petiolate, ovate to long-lanceolate, entire. *Flowers* solitary, subsessile in the dichotomies.

Calyx-segments subspatulate. *Corolla* shorter than the calyx. *Capsule* ovate-conical, villous.

(Mex. to Andina); S. Patagon., by Hatcher. (Compared in Gray Herb.)

Family 96. BORRAGINACEÆ. Borage Family.

Herbs, shrubs, or even tropical trees, with mostly alternate, exstipulate, hairy *leaves*, and generally regular, 5-merous, sympetalous, bluish flowers in *scorpioid inflorescence*. *Stamens* 5, epipetalous and alternipetalous. Ovary superior, of 2 carpels, each of them deeply 2-lobed, becoming a *fruit* of 4 achenes. *Style* simple or sometimes 2- or 4-cleft. *Seeds* with or without endosperm.

Species 1,500, widely distributed.

KEY TO THE GENERA.

A. Style terminal.
  b. Styles twice dichotomously divided. Ovary not lobed. Calyx accrescent, with 5 lanceolate processes under the fruit. Stone-fruit with mostly 4-celled nucleus. Cotyledons folded (Cordioideæ). 1. *Patagonula*, p. 676.
  b2. Style simple or 2-cleft, or 2 styles. Stone-fruit of 4 separate pyrenes, or of 2 carpels separating into 4. Cotyledons flat (Heliotropoideæ). 2. *Heliotropium*, p. 677.
A2. Style simple or bifid, inserted between the lobes of the deeply 4-lobed ovary. Fruit of several 1-seeded mericarps. Flowers regular.
  b. Gynobase more or less conical.
    c. Nutlets with the points not extending beyond the attachment surface, rather long, with hooks. Stamens not or slightly protruding. Calyx scarcely accrescent. 3. *Pectocarya*, p. 677.
    c2. Nutlets, with the points extending beyond the attachment surfaces, indehiscent; facets at least half as large as the ventral surfaces. Stamens not protruding.
      d. Cotyledons not partite.
        e. Attachment facets below the middle of the nutlets. 4. *Eritrichium*, p. 678.
        e2. Attachment facets above the middle of the nutlets, and flat. Leaves alternate, or in rosettes. Stem not branched dichasially. Nutlets keeled subapically. 5. *Plagiobotrys*, p. 679.
      d2. Cotyledons 2-partite. Nutlets smooth. 6. *Amsinckia*, p. 679.
  b2. Gynobase flat or slightly convex. Facets of attachment of nutlets flat. Æstivation contorted. Flowers few. 7. *Myosotis*, p. 680.

1. PATAGONULA Linn.

Shrubs or trees, with alternate *leaves*. *Flowers* small, crowded at the apex of the branches. *Calyx* deeply 5-cleft, its lobes long and stellately spreading in fruit, enclosing the drupes. *Stamens* exserted. *Filaments* basally widened and connate. *Ovary* 4-celled; *style* 2-cleft, and its *branches* again 2-cleft; stigmas capitate. *Fruit* often only 1-seeded; *drupe* subglobose, acuminate to a rostrum.

Species 2, Brazil and southwards.

PATAGONULA AMERICANA Linn.

A tree 10 meters high. *Leaves* sparse, lanceolate or obovate, entire or serrate at apex; glabrous on both sides. Flowers white.

(S. Brazil, useful wood, "ipe-branco"; in Argentina called "guayavi"); (Fig. in Eng. & Prantl, iv, 3*a*, p. 85, C–E.)

P AMERICANA HIRSUTA.

This year's branches, petioles, rachis and under-surface of *leaves* rough, with long, sparse hairs.

N. Patagon.

2. HELIOTROPIUM Linn.

Herbs or shrubs, with small, blue or white *flowers* in scorpioid spikes or scattered. *Corolla* naked in the throat. *Stamens* included. *Style* terminal; *ovary* entire or 2- or 4-grooved (not lobed).

Species 115, in warm climates.

H. CURASSAVICUM Linn. (sub *Heliophytum* in DC. Prodr.).

Glabrous, branched. *Leaves* linear or spatulate, obtuse, fleshy, entire. *Spikes* scorpioid. *Flowers* white, with yellow eye; or bluish. *Fruit* becoming 4 nutlets.

(Widespread in tropics; in S. and W. of United States); N. Patagon., in salt marshes by mouths of Rio Negro, and elsewhere. (Fig. in Eng. & Prantl, iv, 3*a*, p. 93, Q–U.)

3. PECTOCARYA DC.

Small annuals, with linear, alternate *leaves* and minute *flowers*, sessile or short-pediceled, axillary. *Calyx-lobes* small. *Corolla-lobes* 5, imbricating, spreading; tube short, with small scales. *Stamens* inserted in the tube, with short filaments and ovoid anthers. *Style* small; *stigma* capitate. *Achenes* ovoid, with an oval ring of hooked *spines*. (Fig. in Eng. & Prantl, iv, 3*a*, p. 100, H.)

Species 5, Pacific coast of Amer.

PECTOCARYA LINEARIS (R. & P.) DC. (*P. chilensis* DC.)

Annual, with *stems* and narrow-linear *leaves* hoary by appressed pubescence, and oppositifoliose pedicels. *Calyx-lobes* as long as the nucules, which are pectinate-margined all round. Much branching from a woody base. Leaves 13 mm. by 1 mm.

(Common to N. and S. Amer.; Chili); Patagon., at Rawson (Dusén); Rivers Gallegos and Sta. Cruz, in dry plains, and by Rio Deseado.

4. ERITRICHIUM Schrad.

Perennial herbs, mostly hairy; usually with bractless *racemes*, and small, mostly blue or white *flowers*. *Calyx* deeply 5-cleft. *Corolla-tube* short, usually with 5 small scales at the throat; its lobes obtuse. *Stamens* included. *Ovary* 4-lobed; *stigma* subcapitate. *Achenes* unarmed, or with a row of non-glochidiate prickles, or rarely winged.

Species 30, temperate regions. (Fig. in Eng. & Prantl, iv, 3*a*, p. 108, C–E.)

1. E. ALBIFLORUM Gris. (non *Myosotis albiflora* Banks & Sol.).

Stout, upright, seemingly perennial.

Patagon., arid plains by Golfo de San Jorge; E. Fuegia (Ansorge). Nearly allied to *E. pampeanum* Speg.

2. E. DIFFUSUM Phil.

Stem diffusely branching, 30 cm. high, rough, with spreading bristles and white papillæ. *Leaves* linear with white papillæ, hispid. *Calyx* scaleless, its tube and lobes rough, with yellow, spreading bristles. *Corolla* very small, its tube as long as the calyx. *Nucules* subrugose.

(Chilian Andes); S. Patagon, by mouth of Rio Sta. Cruz.

3. E. HUMILE (R. & P., sub *Myosotis*) DC.

Low, sparsely villous or glabrous. *Root* fibrous. *Stems* ternately divided, the mid erect, the laterals procumbent. *Lower leaves* opposite, narrow-linear, elongated, obtuse. *Flowers* white, the laterals secund, sessile, becoming short-pediceled in fruit. *Nutlets* rugose.

(Bolivia); Patagon., by Rio Sta. Cruz.

4. ERITRICHIUM PARVULUM Phil.

Annual. *Stems* simple or sparsely branched, erect, filiform, setose as are the leaves. Cauline *setæ* spreading. *Raceme* few-flowered, at first capituliform, afterwards elongate. *Calyx* 5 mm. long, rough, with long yellow setæ; its teeth filiform. *Corolla* minute. *Achenes* elongate, greenish, warty-granulate.

(Atacama in Chili); S. Patagon., by Rio Sta. Cruz.

5. E. ULIGINOSUM Phil. (by O. Ktze. sub *Cynoglossospermum*).

Low, with fibrous root. Damp or aquatic forms.

Patagon.

5. PLAGIOBOTRYS Fisch. & Mey. (*Echidiocarya* A. Gr.)

Low, annual herbs often white-hairy; sometimes with a rosette of basal *leaves*. *Calyx* mostly accrescent. *Achenes* ovoid, with lateral ridge, and evenly rounded exterior, transversely rugulose; the areole orbicular on a convex or subglobose gynobase, or sometimes concave.

Species 15, on the Pacific coast o. America.

P. PROCUMBENS (DC.) A. Gray.

Low, small, multicauline, and subcespitose. *Root* simple. *Stems* hispid, procumbent or ascending. *Leaves* linear, short, obtuse, opposite below. *Flowers* sparse, or laxly spicate.

(Chili); Patagon., by Golfo de San Jorge; in Salinas near Rio Sta. Cruz

6. AMSINCKIA Lehm.

Prostrate annuals, mostly hairy, with few-flowered *cymes* and alternate *leaves*. *Calyx-lobes* linear. *Corolla* tubular-funnelform, without scales in the throat. *Stamens* and capitate *stigma* included. *Achenes* rather smooth.

Species 8, on Pacific coast of N. and S. Amer.

A. ANGUSTIFOLIA Lehm.

Nutlets rugose, dorsally convex, not distinctly angled. *Stem* strict, simply or sparsely branched. *Leaves* long, linear-lanceolate; *throat* of corolla glabrous, naked, its limb half as long as its tube; *stamens* inserted in the throat.

(Chili); Patagon. at Puerto Madryn; in sandy plains near Rivers Deseado and Sta. Cruz; W. Patagon.; N. and E. Fuegia, usually in inhabited places (Dusén).

7. MYOSOTIS Linn. Forget-me-not.

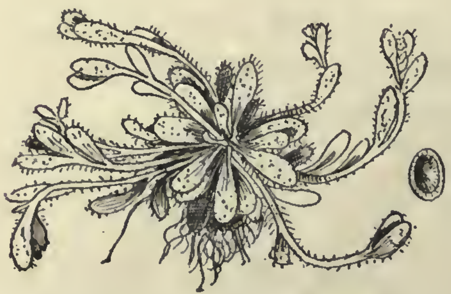
Low herbs, with alternate, entire *leaves*, and small, blue-pink to white *flowers*, usually in many-flowered, *scorpioid cymes*. *Calyx-lobes* narrow. *Corolla* salverform, the throat crested. *Stamens* included. *Nutlets* erect, leaving flat scars.

Species 35, widely diffused.

M. albiflora Banks & Sol.

Sparsely appressed-hairy. *Stems* many from a stout rhizome, prostrate, slender. *Radical leaves* spatulate, petioled; cauline, obovate-oblong. *Flowers* few, axillary, short-pediceled. *Calyx* campanulate. *Corolla-tube* exceeding the calyx, its lobes broad-oblong, rather short. *Seeds* smooth, shining (Fig. 88).

Fig. 88.



(*Myosotis albiflora.*— Plant and magnified seed. (After Dusén.)

S. Patagon., Magellan; N. and S. Fuegia, rare (Dusén; "flowers not cymose, inconspicuous").

"Near *M. antarctica*, but more slender and nearly glabrous. Belongs to the New Zealand group of the genus." (J. D. Hooker.)

Family 97. Verbenaceæ. Verbena Family.

Herbs, shrubs, or some tropical trees, with mostly opposite leaves and usually zygomorphous flowers, having didynamous (rarely only diandrous) stamens inserted on the sympetalous corolla. Ovary superior, of 2 carpels (not lobed), 2–4-celled, or rarely 8–10-celled. Style terminal, simple. Fruit 2–4-achenes, or drupaceous. Seeds with little or no endosperm.

Species 1,200, widely distributed in temperate and warm climates.

Key to the Genera.

(All the Patagonian forms have spicate or racemose, that is, non-cymose, inflorescence; and seeds without endosperm.)

A. Flowers spicate.
  b. Fruit 4-merous, becoming 4 drupelets. 1. *Verbena*, p. 681.

b2. Fruit 2-merous.
  c. Calyx truncate or notched. Corolla 4–5-lobed. Drupelets 2. 2. *Lantana*, p. 690.
  c2. Calyx 4-cleft or 4-toothed. Corolla 4-lobed. Nutlets 4. 3. *Lippia*, p. 691.
  c3. Calyx 5-toothed. Corolla 5-lobed. Nutlets 2, not separating. 4. *Monopyrena*, p. 692.
A2. Flowers racemose. Fruit 2–4-celled, becoming 4-drupelets. Calyx shortly 5-toothed, becoming enlarged and enclosing the fruit. Anther cells divergent. 5. *Rhaphithamnus*, p. 693.

1. VERBENA J. St. Hil.

Flowers perfect, nearly regular, terminally spiked, rarely racemed, or panicled. *Calyx* inferior, 4–5-merous. *Corolla* mostly 5-cleft. *Stamens* didynamous, or rarely 2. *Style* simple; stigmas 1 or 2. *Fruit* dry or drupaceous, separating into 4 pyrenes. *Endosperm* scanty.

Species 190, chiefly American; 1 in the Mediterr. region.

Key to the Tribes.

A. (*Verbenaca.*) No appendages on connective of upper anthers.
  b. Pungentes. Heads composed of 2–few-flowers, on tops of branches. Small, often cespitose:—*carroo, erinacea, seriphioides*, etc.
  b2. Nobiles. Spikes capitate when young, afterwards elongating. Creeping undershrubs; calyx long-tubular; flowers handsome:—*chamædrifolia, teucrioides*, etc.
  b3. Junciformes. Flowers in heads or short spikes. Leaves reduced, or scale-like—*glauca.*
  b4. Verticiliflorœ. Spikes with remote, quasi-verticils. Corolla-tube long, curved:—*asper*, etc.
A2. (*Glandularia.*) Glandular appendage on connective of upper anthers. Leaves divided:—*erinoides, sulfurea, tenera*, etc.

Key to the Species.

A. Flowers solitary or subsolitary. Leaves minute.
  b. Leaves linear, hairy. Corolla long. *uniflora.*
  b2. Leaves ovate, triquetrous. Spiny shrub, decussately branching. Bracts ovate. Flowers white-lilac. *seriphioides.*
A2. Spikes solitary, terminal; at first usually capitate.
  b. Spike sessile or nearly so.
    c. Leaves trifid, segments narrow-linear, hispid, pungent. Small, spiny shrub. Corolla ochroleucous. *ameghinoi.*
    c2. Leaves 3-partite, crowded, segments linear-spatulate. Bracts linear-lanceolate to ovate. Corolla long. *struthionum.*
    c3. Leaves triquetrous, connate; as are the bracts. Corolla long. *connatibracteata.*
  b2. Spikes peduncled.
    c. Spikes subverticillate, lax. Leaves small, alternate; and axillary fascicled, oblong-lanceolate, rough. Calyx 4-cleft. Corolla white. *aspera.*

*c*2. Leaves ovate-oblong, attenuate-petiolate. Bracts narrow-lanceolate.

d. Leaves rough. Flowers scarlet. *chamaedrifolia.*

*d*2. Leaves tomentose underneath. Flowers white to pink. *teucrioides.*

*d*3. Leaves 3-partite.

e. Segments partite into linear subsegments. Spikes at first subsessile. Stamens 2. Calyx accrescent. *inflata.*

*e*2. Segments lanceolate. Anthers minutely appendaged. Corolla red-violet. *erinoides.*

*c*4. Leaves spatulate to obovate, 3-toothed to 3-lobed, glabrous. Bracts linear, hairy. Corolla long, orange. *aurantiaca.*

*c*5. Leaves decussate, minute, hispid. Calyx 4-toothed. Corolla orange, bilabiate. *lorentzii.*

*b*3. Leaves quadrifariously imbricate, obovate, pairs not connate. Bracts leafy, oval.

c. Spikes peduncled. Leaves silky. Corolla hairy. *patagonica.*

*c*2. Spikes sessile, few-flowered. Leaves small, linear, less villous. *azorelloides.*

*A*3. Spikes terminal, peduncled, in 1's or 3's. Leaves pinnatifid, decurrent-petiolate. Bracts lanceolate, half as long as the hairy calyx. Corolla violet. Anther appendages small. *tenera.*

*A*4. Spikes terminal on this year's branches, the young leaves tripartite, pungent. The old parts black, bearing reduced branches with quadrifariously imbricate glomerules of minute, thick, entire leaves. Virgate shrubs. *carroo.*

*A*5. Flowers in heads (dense spikes, sometimes at length elongating).

b. Corolla long (its tube at least twice as long as the calyx).

c. Leaves minute, tripartite. Bracts half as long as the calyx.

d. Segments of leaves linear, obtuse. Bracts ovate. Corolla-tube pink, limb drab. *philippiana.*

*d*2. Segments linear, apically rounded. Bracts oblong. Calyx ribbed. *tridactylites.*

*c*2. Leaves minute, lobed, succulent; with smaller leaves in axils. Bracts broad. Calyx 5-costate. *succulentifolia.*

*c*3. Leaves alternate, short-linear, and others in axils. Bracts ovate. Heads globose. Corolla 4-lobed. Branches secund. *gayana.*

*b*2. Corolla not long (not twice as long as calyx).

c. Bracts lanceolate-acuminate. Heads peduncled, many-flowered. Corolla sulphur-colored. Anther-appendages violet. *sulphurea.*

*c*2. Bracts ovate-lanceolate. Leaves acerose, connate, becoming spinescent. Heads immersed, few-flowered. *erinacea.*

*c*3. Bracts ovate, half as long as calyx, hairy. Leaves ovate-acute, imbricate, hirsute. *morenonis.*

*c*4. Bracts small, broad. Leaves ovate. *thymifolia.*

*c*5. Bracts long, cordate, pungent. Branches filiform, glaucous. Leaves minute, distant, linear. Heads ovate. *glauca.*

*A*6. Shrubs with cylindric spike, and trifid leaves having subulate segments, and with 3-toothed bracts. *tridens.*

*A*7. Leaves of two kinds, spinose-acicular, recurved, opposite; and axillary smaller, straight leaves. *toninii.*

*A*8. Spikes paniculate. Stems tetragonal.

b. Leaves lanceolate, auriculate, amplexicaul, rough on the veins. Stem naked upwards. Bracts lanceolate. Flowers rose or violet. *bonariensis.*

*b*2. Leaves cuneate-oblong, rough underneath; smaller and narrower upwards. Flowers violet. *intermedia.*

1. VERBENA AMEGHINOI Speg.

Small, cespitose, densely branching, spiny shrub. *Old leaves* arescent, curved-spreading, slender; with small fasciculate apical twigs, appressed-leafy. *Leaves* trifid, hispid; the segments narrow-linear, erect, coarsely costate, revolute-marginate, apex acute, mucronate, pungent. *Spikes* apical, sessile, few-flowered, with leafy bracts. *Calyx* 5-costate, hispid, 5-toothed, the teeth spinescent. *Corolla* ochroleucous, long-exsert, glabrous, enlarged at the throat. *Lobes* sublinear, obtuse.

Patagon., on plains near Golfo de San Jorge.

2. V. ASPERA Gill. & Hook.

Fruticulose, with hirtellate branches, and small, alternate *leaves*, axillary proliferous, oblong-lanceolate, acute or spatulate, attenuate to a short petiole, margins revolute, rough. *Spikes* subverticillate, few-flowered, laxly imbricate, elongate. *Bracts* subulate, shorter than the tubular, unequal, 4-cleft *calyx*, and, like it, rough. *Corolla* white, glabrous, its limb 5-parted.

(Peru); Patagon.

3. V. AURANTIACA Speg.

Lax-branching perennial, with branches prostrate to ascending, glabrous, sparingly ramulose. *Leaves* thick, membranaceous, spatulate to obovate, glabrous, 3-toothed or 3-lobed, the lobes obtuse. *Spikes* apical. *Bracts* lanceolate, pubescent. *Calyx* tubular, pubescent. *Corolla* twice as long, orange, glabrous. Anthers yellow, not appendaged.

(Argentina); Patagon., by Golfo de San Jorge; Rivers Gallegos and Sta. Cruz.

4. V. AZORELLOIDES Speg.

Like *V. patagonica* Speg., but less villous, and less compact. *Leaves* small, linear, entire, obtuse, puberulous. *Spikes* sessile, few-flowered. *Corolla* purple.

Patagon., by Golfo de San Jorge; Lago Argentino.

5. VERBENA BONARIENSIS Linn.

Stem strict, tetragonal, scabrid to subvillous, naked upwards. *Leaves* lanceolate, acutely subauriculate, adnate-amplexicaul, the upper part incised-serrate, revolute, the veins and rugæ hirsute. *Panicle* terminal, fastigiate, consisting of long-stalked cymes, these consisting of dense cylindrical spikes. *Bracts* lanceolate-acuminate, at least equalling the *calyx*, which is hispidulous on the angles. *Flowers* rose or violet.

(Amer. tropics; and grassy plains of Bonaria; in damp ground; also in S. Africa); N. Patagon., in Valleys of Rio Colorado and Rio Negro.

6. V. CARROO Speg. (Plate XXIII.)

Virgate shrub, 1–2 meters high, blackish, gloomy, with thick, erect branches, everywhere quadrifariously branching, the branchlets small abortive, glomeruliform, tetragonally stellate, densely leafy-imbricate; *this year's branches*, simple, patent, erect, leafy, with branchlets. *Leaves* glabrous, dimorphous, all minute; this year's sessile, opposite, amplexicaul, tripartite, the lobes divaricate, pungent, segments entire, margin revolute, carinate at the nerve, being black-purplish or castaneous; last year's breaking up and bearing glomeruliform branchlets. *Leaves* of abortive branchlets quadrifariously and densely imbricated, simple, ovate-linear, obtuse, shining; their margin entire revolute.

Spikes, terminal on this year's branches, black-castaneous, 1 or few, sessile, cylindraceo-capitate, compact. *Bracts* opposite, leaf-like, trifid, 1-flowered. Flowers sessile, fragrant. *Calyx* campanulate, obliquely truncate, 5-toothed, the 2 front teeth evolute. *Corolla* white or pink, pubescent outside and in the throat; limb spreading, 5-lobed. *Stamens* 4, inserted at upper third of tube. *Style* simple. *Ovary* glabrous or puberulous.

S. Patagon., by Rio Sta. Cruz and R. Gallegos. "Carroo of the Tehuelche natives; of extraordinary habit. Referred by Philippi to *V. tridens* Lag." (Speg.). By Peterson at Rio Sta. Cruz. "Mate negra," abundant and used for fuel. (J. B. Hatcher.)

7. V. CHAMÆDRIFOLIA Juss.

Stems filiform, dichotomously branching, creeping, hirt, the apex and branches ascending. *Leaves* oblong or ovate, broadly basi-cuneate, contracted to a short petiole, crenate or incised-serrate, strigose above, hirt below. *Peduncles* long; the spike solitary; *bracts* lance-subulate, ciliate, shorter than the hoary calyx. *Flowers* large scarlet.

(S. Brazil and Argentina; much cultivated for its splendid flowers); N. Patagon., by Rio Negro.

8. VERBENA CONNATIBRACTEATA O. Ktze.

Low, branching shrub, 15–20 cm. high. *Leaves* crowded, basally subconnate, triquetrous, canaliculate above, acute. Lax, 6–8-flowered terminal, subsessile *spike*. *Flowers* opposite in pairs, with green connate *bracts* as long as the calyx, or the upper bracts free. *Calyx* cylindrical, green, spinose-toothed, pubescent. *Corolla* twice as long, with slender, glabrous tube.

(Argentina); Patagon..

9. V. ERINACEA Gill. & Hook.

Spinous shrub, cespitose; with thick, woody root, and dense, opposite, connate, acerose *leaves*, pungent, at length long-spinescent. *Heads* few-flowered, at length immersed among the leaves. *Bracts* ovate-lanceolate, mucronate, one fourth shorter than the long, tubular, rough, striate calyx. *Calyx-teeth* pungent. *Corolla* half exceeding the calyx.

(Argentina); Patagon., by Lago Argentino.

10. V. ERINOIDES Lam.

Stem rooting, strigose-hirt, branching, decumbent, the branches ascending. *Leaves* basi-cuneate, narrowing to a petiole, 3-partite, pinnatifid, or laciniate; their segments lanceolate, acutish, entire or toothed, revolute, strigose. *Spikes* terminal and alar, pedunculate, solitary, at first fastigiate, canescent. *Bracts* lance-acuminate, spreading, nearly equalling the long *calyx*. *Anther appendages* short, bearded.

Annual, coming early (Nov.); with white flowers ("red-violet" DC.); having scent of vanilla.

(S. Brazil; Peru); N. Patagon., near Rio Negro.

11. V. GAYANA O. Ktze. (*V. glauca* Gay, non Gill. & Hook.)

Hispid-hairy *shrub;* branching, the branches rigid, secund. *Leaves* short-linear, erect, alternate, with smaller in the axils. *Heads* terminal, subglobose. *Bracts* ovate-acuminate, nearly as long as the calyx. *Corolla* twice as long, 4-lobed.

At Coquimbo, Chili; Atacama.

12. VERBENA GLAUCA Gill. & Hook.

Glaucous, suffruticose, with long, terete, filiform branches. *Leaves* distant, minute, linear, 6 mm. long. *Spikes* capitate, ovate, pubescent, dense-flowered. Outer *bracts* twice as large ("as broad" O. Ktze.) as the calyx, cordate, rigid, pungent. *Anthers* without appendages.

(Chili); Patagon.

V. GLAUCA CISANDINA Nied.

Glaucous, glabrous, few-leaved. Differs by having the *outer bracts* not twice as large as the calyx, not cordate, but concave, broad-acuminate. *Calyx* and corolla 5-partite. *Leaves* not alternate, but remotely decussate.

N. Patagon., near Rio Negro.

13. V. INFLATA H. B. & K.

Procumbent, branching undershrub, hoary, with strigose pubescence. *Leaves* sessile nearly to the base, tripartite, their segments narrow, 2–5-cleft, subsegments linear, obtuse, revolute. *Spikes* terminal, crowded, at length lax. *Bracts* lanceolate, subulate, shorter than the calyx, which equals the corolla-tube. *Stamens* 2. *Capsule* obovate, enclosed in the enlarged (not inflated) *calyx*.

(Quito and southwards in the Andes); S. Patagon., by Hatcher at Rio Sta. Cruz, on wet ground, Jan. 9, 1897. (Compared in Gray Herb.)

14. V. INTERMEDIA Gill & Hook. (*V. gracilis* Cham.)

Rhizome creeping. *Stems* simple, strict, tetragonal, marginate, scabrid. *Leaves* subsessile, subconnate, arrect, diminishing upwards; the lowest cuneate-oblong, the others linear-lanceolate, acute, margin revolute, incised-serrate or entire, rugose above, rough underneath. *Panicle* terminal, rare; *spikes* crowded, at length subcylindrical, hirtulous and glandular. *Bracts* ovate, acuminate, as long as the calyx. *Corolla* twice as long, violet.

(Grassy plains of Bonaria); N. Patagon., near Rio Negro.

15. V. LORENTZII Nied.

Shrub, 1 meter high, decussately branching; branches tetragonal, becoming terete, nodose. *Hairs* 1-celled. *Leaves* decussate, minute, hispid, linear to ovate-lanceolate, entire, acuminate, or spatulate-obtuse, basally attenuate, subsessile, revolute, black in drying. *Flowers* in ovate spikes at the ends of the branches; sessile in the axils of rough, ciliate bracts. *Calyx* long-tubular, 4-toothed, plicate, its lobes unequal. *Corolla* orange, tubular, scarcely incurved, subbilabiate. *Style* long, stigma dilated, bilabiate, globose. *Fruit* of 4 oblong winged pyrenes in the accrescent calyx.

Patagon., by Rio Negro; Golfo de San Jorge; at Puerto Madryn; Rio de Sta. Cruz.

16. VERBENA MORENONIS O. Ktze. (*V. thymoides* Ph. p. p. non Cham.)

Pulvinate-branching *shrub*. *Leaves* opposite, crowded, imbricate, ovate, acutish, white-hirsute, 1.5 by 1 mm. *Flowers* 20 in terminal heads. *Calyx* and bracts hoary-pilose; *calyx* 6 mm. long, furcate cylindrical, obliquely 5-toothed; *bracts* half as long, ovate. *Corolla* exceeding the calyx, blackening when dry.

(Chili); Patagon.

(This is *V. patagonica* Speg. Bol. S. N. C., Cordoba, xvi, 249.)

17. V. PATAGONICA Speg.

Pulvinate, cespitose, thick-stemmed shrub, silky-puberulous. *Leaves* quadrifariously crowded, obscurely imbricate, obovate, thickish, rigid, subacute, cuneate, attenuate, sessile; the opposite not connate. *Spikes* ending the branchlets, pediceled, 1–3-leafy-bracteolate. *Flowers* solitary in the axils of oval, acute, silky bracts. *Calyx* green, hoary, 5-costate, 5-toothed, its teeth obconical. *Corolla-tube* subcylindrical, half exceeding the calyx, hoary outside, its throat bearded; its limb spreading, with 5 subequal lobes. *Stamens* 4, the anterior pair inserted higher than the posterior, filaments very short. *Style* filiform, subclavulate. *Stigma* small, with 2 unequal lobes. *Ovary* green, glabrous, 4-sulcate.

Patagon., by Rio de Sta. Cruz (at "Cerro de los Caracoles," called "Meseta." Compare *V. azorelloides* Speg.).

18. V. PHILIPPIANA (*V. microphylla* Phil. non H. B. & K.) O. Ktze.

Fruticose, low, branching. *Leaves* minute, sessile, fasciculate, crowded, tripartite, strigose; their segments linear, obtuse, with revolute margins. *Spikes* capitate. *Bracts* ovate, half as long as the calyx. Perianth with white reflex hairs. *Calyx-teeth* short, ovate. Tube of *corolla* pink, more than twice as long as the calyx; its *limb* with short segments, drab-colored. *Stamens* included.

(Andes); Patagon.

19. VERBENA SERIPHIOIDES Gill. & Hook.

Shrubs, with many very short *branchlets* decussate on tetragonal branches; the *leaves* mostly dense, connate, ovate-triquetrous, thick, carinate, canaliculate above, obtuse, glabrous. *Leaves* scarcely 4 mm. long. *Spines* opposite, connate, broadly subulate, subfoliaceous, ciliate, at length elongate, rigid, entire or trifid. *Flowers* subsolitary at the apex of the branches. *Bracts* ovate. *Corolla* half as long again as the calyx, white-lilac.

(Argentina); S. Patagon.

20. V. STRUTHIONUM Speg.

Thick-stemmed, prostrate or cespitose shrub, with slender, hoary, tetragonal *branchlets*. *Leaves* opposite, small, rigid, patent-incurved, green, crowded, especially at ends of branchlets; sessile, amplexicaul, deeply 3-partite, the segments linear-spatulate. *Spikes* apical, solitary, sessile or nearly so. *Floral bracts* decussate, linear-lanceolate or ovate, 1-flowered, as long as the calyx; *calyx* cylindrical, campanulate, 5-plicate, costate, 5-toothed, hoary. *Corolla-tube* twice as long as the calyx, obclavate, slender below, inflated and hoary above, coarctate next the limb, bearded inside. *Corolla-limb* 5-lobed, lobes elliptical, the anterior lobes larger. *Stamens* 4, inserted at upper third.

Patagon., by Rivers Gallegos and Sta. Cruz; Golfo de San Jorge. "Mesati" of natives.

21. V. SUCCULENTIFOLIA O. Ktze.

Low, branching, unarmed shrub. *Leaves* opposite, sessile, succulent, blackening, rough, obtuse, oblong, shortly lobed at base, 4 mm. long, with smaller leaves crowded in the axils. *Inflorescence*, terminal, 20 flowers in a pediceled, obovate head, with broad, outer bracts. *Calyx* 5-costate, with short, acute teeth. *Corolla-tube* twice as long.

Patagon.

22. V. SULPHUREA Sweet.

Hirt undershrub; branches tetragonal, hirsute. *Leaves* more or less pinnatipartite, entire at base, petioled, hispidulous; the rachis and segments linear, obtuse, revolute. *Spikes* peduncled, capitate, many-flowered. *Bracts* lanceolate, acuminate, one third shorter than the hirsute *calyx*. *Corolla* glabrous, pale sulfureous, 1 cm. long, exceeding the calyx. *Anther-appendages* clavate, exsert, violet, recurved-patent.

(Chili, in sterile places by the sea); N. Patagon.

VERBENA SULFUREA INTERMEDIA O. Ktze.

Corolla-tube twice as long as the calyx; 15 mm.

23. V. TENERA Spreng.

Prostrate, much branching undershrub, creeping, but the branches ascending. *Leaves* decurrent to a short petiole, pinnatifid-laciniate, their segments linear, acute, entire, margin subrevolute. *Spikes* terminal, peduncled, solitary or in 3's, fastigiate, at length elongating, and lax. *Bracts* lanceolate, acuminate, half as long as the long hairy or rough *calyx*, which has glands at its angles. *Anther-appendages* scarcely exsert, claviculate, slightly recurved.

(S. Brazil); Patagon.

24. V. TEUCRIOIDES Gill. & Hook.

Stems cespitose, rooting at the base, ascending; terete, patent, hirt. *Leaves* ovate or oblong-triangular, subcuneate, entire, narrowing to a short petiole, subsinuate-serrate, revolute, rugosely venous, glandular-hairy above, tomentose beneath. *Spikes* terminal, solitary, glandular-hirtellate. *Bracts* subulate-lanceolate, ciliate, half as long as the nervose calyx. *Flowers* large, white to pinkish.

(S. Brazil; Andina); N. Patagon., common about Rio Negro.

25. (?) V. THYMIFOLIA Lag.

Suffruticose, low, branching. *Leaves* ovate, ciliate, scabrid, revolute. *Spike* terminal, capitate, solitary.

S. Patagon., Puerto Deseado; Lago Sta. Cruz. "Floral bracts 3–4 mm. by 2.5–3 mm., broader than in Philippi." (Speg.)

26. V. TONINII O. Ktze.

Very low, robust shrub, with *stem* 1 cm. thick. *Leaves* crowded, of 2 forms; opposite, basiconnate, spinose-acicular, 1 cm. long, subrecurved, forked-triangular; and others half as large, and straight, in the axils.

Bracts broad-lanceolate, not spiny, nearly as long as the calyx. *Calyx* pentagonal with subspinose, unequal teeth. *Corolla* a little longer.

Patagon.

27. VERBENA TRIDACTYLITES Lag.

Shrubby, low, branching, slightly hirtellate, with white hairs. *Leaves* tripartite, their segments linear, rounded at the apex, revolute. *Spikes* terminal, capitate, solitary. *Bracts* oblong, more than half as long as the 10-ribbed calyx. *Corolla-tube* nearly twice as long as the calyx. ("Leaves connate bifid." Schauer in DC. Prodr.)

Falklands; S. Patagon., by Hatcher at Rio Sta. Cruz, in wet ground.

28. V. TRIDENS Lag.

Shrub, 1 meter high. *Leaves* trifid, the segments subulate, arenose. *Spikes* cylindric. *Bracts* short, 3-toothed.

S. Patagon., at mouth of Rio Sta. Cruz (Dusén); in Valley of R. Gallegos (Nordensk.).

29. V. UNIFLORA Phil.

Fruticose, densely cespitose, very low, 7 cm. *Leaves* crowded, 4 mm. long, linear, obtuse, entire, pubescent, ciliate. *Flowers* solitary at ends of the branches. *Calyx* hirt. *Corolla* twice as long as calyx, pilose inside. *Achenes* 2 mm. long.

(Chili; Argent.)

V. UNIFLORA GLABRIUSCULA O. Ktze.

Leaves subglabrous.

Patagon.

2. LANTANA Linn.

Usually shrubs, scabrous or tomentose, with simple hairs, and with opposite *leaves*. *Spikes* dense or capitate, pedunculate in the axils, the flowers red to orange or white, not large, sessile in bracts. *Calyx* small, truncate or toothed. *Corolla-tube* rather long, its lobes spreading. *Ovary* 2-celled; cells 1-seeded. *Drupe* juicy.

Species 50, most in warm parts of Amer.; some in Asia & Afr. (fig. in Eng. & Prantl, iv, 3*a*, p. 150, A, B).

L. CLARAZII Ball.

Profusely branching. *Leaves* sessile, at least the upper, linear-lanceolate, attenuate both ways, entire or revolute, midrib prominent, other nerves obsolete. *Bracts* ovate, nearly as long as the shortly 4-toothed *calyx*. *Corolla* exserted, bilabiate.

Plateaux of N. Patagon., above Rio Negro.

3. LIPPIA Linn.

Leaves opposite or whorled, rarely alternate. Flowers small, bracted, in spikes or heads. Calyx small, 2–4-merous. Corolla 4-cleft, 2-lipped. Ovary 2-celled; fruit dry, separating into 4 achenes.

Species 100, most in tropical Amer.; some extending to Mex.; and outliers in Galapagos, Africa, Timor (not in Australasia).

(Fig. in Eng. & Prantl, iv, 3*a*, p. 150, C, D.)

1. L. FOLIOLOSA Phil.

Low, fruticose, rather glabrous. *Leaves* crowded, minute, cuneate, oblong, 3-lobed, marginally revolute, with a leaf-fascicle in the axil. *Spikes* axillary along the branches, and terminal, short, subglobular. *Bracts* ovate, scarcely shorter than the hispid *calyx*.

(Argentina); N. Patagon., Chubut, by Lago Fontana.

2. L. JUNCEA Schauer.

Suffruticose; sparsely leafy, glabrous. *Branches* long, fistulose. *Leaves* oblong, acute, or elliptic, the base narrowing to a petiole. *Spikes* terminal, somewhat lax. *Flowers* distichous; *bracts* scale-like. *Calyx* short, hairy, its teeth short, unequal.

Valdivia to N. Patagon., Mts. in Chubut.

3. L. LYCIOIDES Steud.

Shrub, with tetragonal branches, and spinescent, hoary-pubescent branchlets. *Leaves* aromatic, opposite, elliptical or lanceolate-oblong, attenuate-petiolate, subrevolute, entire or serrate from the middle, punctate above and below, tomentose. Solitary, axillary *racemes*, panicled at ends of branches and interruptedly whorled. *Calyx* campanulate, hirsute-villous, with subulate teeth. *Corolla* exceeding the calyx by half, its throat villous.

(Argentina and S. Brazil; its leaves are put into Paraguay Tea, and also used medicinally. Poleo of the Spaniards; Tschoike-mammel or Ostrich-wood of the Araucanians. Also in Mexico.)

N. Patagon.

4. LIPPIA NODIFLORA (L.) Michx.

Creeping, short, appressed, dense hairs. *Leaves* thickish, spatulate to obovate, serrate toward their apex, entire and cuneate toward their base. *Peduncles* slender, many times exceeding the leaves, arising from the nodes. *Heads* ovoid. *Calyx* flat, 2-cleft. *Corolla* purple to white.

(In warm parts of United States and W. Indies; and in all tropical sandy sea-coasts.) N. Patagon., by Roca Exped.

5. L. SERIPHIOIDES A. Gray.

Intricately branching, scabrid shrub. *Leaves* minute (2–5 mm. long), fasciculate, linear-spatulate or cuneate, usually 3-lobed, revolute. *Heads* globose, at length elongating, solitary or racemed from short axillary peduncles. *Bracts* ovate, shorter than the bifid calyx. *Anthers* often with glandular appendages.

N. Patagon., by Rio Negro; S. Patagon., at Puerto Madryn. (Dusén). The characteristic species of Patagonia, not extending far beyond its boundaries; "Tomillo del campos" (Span.), "Loom" (Araucan.). Used as Thyme for flavoring, and its infusion as medicine.

(*L. citriodora* (Lam.) Kunth., also known as *Aloysia*, and as *Verbena triphylla*, a stiff, branching shrub, with whorls of 3–4 leaves, and panicled spikes of flowers, is a garden favorite on account of its fragrance. Being a native of Chili, it may occur in North Patagonia.)

4. MONOPYRENA Speg.

Calyx tubular, 5-costate, 5-dentate, in fruit changing or scarcely accrescent; *corolla-tube* straight, little enlarged upwards, limb patent, obscurely 2-labiate; lobes 5, obtuse or retuse, the posterior external, the anterior internal. *Stamens* 4, didynamous, inserted above the middle of the retrorsely hispid tube; *anthers* ovate, the upper pair produced to a clavate appendage; the lower pair not appendaged; the cells subparallel. *Ovary* superior, entire, even in anthesis perfectly 4-celled; *cells* 1-ovulate. *Style* short, subtruncate, emarginate; ovules fixed laterally near the base. *Fruit* enclosed in the calyx, dry, quite glabrous, not separating (2 of its pyrenes usually abortive), with an interrupted lacunula. *Seeds* linear, erect, with thin testa.

Distinguished from *Lippia* by the cells of the pyrene being 2; from *Verbena* by the pyrenes not separating.

MONOPYRENA SERPYLLIFOLIA Speg.

Prostrate woody shrub, all appressed-canescent-hispidulous. Young twigs slender. *Leaves* opposite, minute, obovate or rhomboid, thickish, entire. *Spikes* acrogenous, capitate, densely flowered. *Corollas* white with yellow throat.

Cortex rimose; woody white. Resembles a woolly *Thymus serpyllum*.

Patagon., by Golfo de San Jorge.

5. RHAPHITHAMNUS Miers.

Small *trees or shrubs*, often armed, with opposite *leaves* and hermaphrodite, often racemed, minutely bracteolate *flowers*. *Calyx* urceolate, shortly 5-toothed, accrescent. *Corolla* funnelform, its tube ventricose and contracted above, its limb spreading, 4-lobed and the posterior lobe 2-parted. *Stamens* didynamous, and a posterior rudiment. *Ovary* subglobose, 2-carpellary; each carpel 2-celled, the cells 1-seeded. *Style* filiform 2-lamellate at top, scarcely exsert. *Drupe* enclosed in the fleshy calyx.

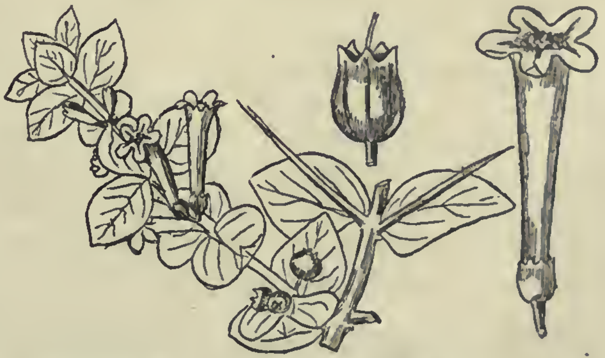
Species 6, Chili, Fernandez (Fig. in Eng. & Prantl, iv, 3*a*, p. 157, O–R.)

1. R. CYANOCARPUS Miers (Hook. & Arn., sub *Citharexylum*).

Evergreen tree, to 6 m. high, with spines and glossy leaves. *Branches* terete, compressed at the nodes, yellow, often appressed-hirsute. *Spines* slender, orange, 2–3 times as long as the leaves. Leaves arising below the spines, orbicular-ovate to rotundate, mucronate, margin revolute, sparsely dotted and sparsely hairy. *Flowers* pendulous, solitary and opposite, some in short, 3–4-flowered racemes, lilac. *Drupes* blue, as large as peas. (Fig. 89.)

(Central Chili); Valdivia.

FIG. 89.



Rhaphithamus cyanocarpus. — Flowering branch, slightly reduced; also flower and fruit, slightly magnified. (After Hooker & Arnott.)

"Arroyon espinado" (Prickly myrtle). The Indians rub pieces of its wood together in order to strike fire. "Conspicuous for its numerous bright green leaves, accompanied by golden spines and lilac flowers, intermixed with blue shining drupes." (J. Miers.)

2. RHAPHITHAMNUS PARVIFOLIUS Miers.

Lower (4 m.) than last, with smaller *leaves* and shorter branches. *Leaves* mostly ternate, ovate-oblong, gradually acute from their middle, much dotted, not revolute. *Spines* few, exceeding the leaves. Axillary racemes, about 3-flowered. *Flowers* pale blue. *Drupe* smaller than a pea.

(Chili & Is.); Valdivia, by Rio Negro.

Family 98. LABIATÆ. Mint Family.

Herbs or shrubs (or rarely tropical trees), with *quadrangular stems* and opposite *leaves*, mostly aromatic. *Flowers* axillary in the upper leaves; usually in cymes or verticillasters, often forming a terminal spike or thyrse. *Perianth* zygomorphous, sympetalous, bilabiate. *Stamens* 4, didynamous, or only 2; epipetalous. *Ovary* superior, deeply 4-lobed; the *style* arising from its central depression, simple, apically bifid. *Fruit* enclosed in the persistent calyx, separating into 4 small, 1-seeded *achenes.* Seeds with scanty or no endosperm.

Species 3,000, widely distributed in temperate and warm climates.

KEY TO THE GENERA.

(The Patagonian genera have the style completely gynobasic; dry nutlets with thin pericarp, basilar, or rarely basi-dorsal, attachment, and usually small stigma.)

A. Seed more or less transversal. Embyro with curved radicle lying on one of the cotyledons. Mature calyx not urceolate, bipartite and a deciduous protuberance on its dorsal surface. Its anterior segment persists. 1. *Scutellaria*, p. 695.

A2. Seed erect. Embryo with straight, short, superior radicle. Disk-lobes when present alternating with fruit-lobes. Nutlets with small, basilar attachment.

  b. Filaments ascending, or diverging and straight.

    c. Corolla-tube usually included by the calyx; stamens and style included; nutlets ovoid, rounded above. Dorsal lip of corolla specialized. Calyx 5–10-toothed. Anthers diverging; the pollen sacs ultimately fusing by their apex. Cymes axillary. 2. *Marrubium*, p. 695.

    c2. Corolla-tube usually not included; and stamens not included in the corolla-tube. Calyx 5-toothed, or 2-lipped with the lower lip at least toothed. Anther-lobes parallel or diverging, long or ovoid, but not fusing apically, and not spreading wide after shedding their pollen.

      d. Corolla strongly 2-lipped; the upper lip concave, partly sickle or helmet-shaped Anthers ovoid. Stamens 4, the dorsal pair shorter.

        e. Calyx short-tubular, obscurely ribbed, 2-lipped, the lips short, entire. Corolla exsert, with broad tube; its upper lip broad-ovate, retuse; its under lip 3-lobed, the mid lobe twice as large as the side lobes, hairy inside. Stamens ascend under the upper lip. Anther-lobes ultimately X-shaped. A low shrub with ovate, entire, 3-nerved leaves. 3. *Cruzia*, p. 696.

*e*2. Calyx tubular-campanulate or with wide border and somewhat funnelform, with 5 triangular teeth, rarely 2-lipped. Corolla-tube mostly included. Upper corolla-lip concave or helmet-shaped, rarely flat. Style branches subequal. Pollen-sacs parallel, spreading. Nutlets ovoid, apically rounded. 4. *Stachys*, p. 696.

*d*2. Corolla 2-lipped or almost regular, its lobes flat. Upper lip, if present, flat or slightly concave. Anthers ovoid, the pollen-sacs diverging. Calyx 10–13, rarely 15-nerved, the teeth not attenuate-awned. Stamens ascending under the upper lip.

e. Fertile stamens 2 (the anterior pair); the others none or reduced. Lower calyx-teeth not exceeding the upper. Styles naked. 5. *Hedeoma*, p. 697.

*e*2. Fertile stamens 4. Calyx 10-nerved, cylindrical, or slightly flat upwards. Lower calyx-teeth at least as long as the upper. Corolla-tube straight or slightly curved, included or exsert. Calyx not elongated in fruit. 6. *Satureia*, p. 697.

*b*2. Filaments descending, lying on or enclosed by the under lip. Anterior lobes of the corolla scarcely longer, but narrower than the posterior, flat, or slightly concave. Ripe calyx enlarged. Corolla-tube included or nearly so. Filaments of anterior stamens free. Style sagittately 2-cleft. 7. *Ocimum*, p. 698.

1. SCUTELLARIA Linn. Skullcap. (Plate XXIV, A.)

Herbs or undershrubs, with gibbous, 2-lipped *calyx*, whose upper lip has a *crest*, or protuberance on its back, and is often deciduous in fruit. *Corolla* much exserted. *Stamens* 4; the upper with 2-celled anthers, the lower with 1-celled.

Species 100, widely distributed.

S. NUMMULÁRIÆFOLIA Hook. f.

Small, glandular-puberulent or densely pubescent. *Stems* 9 cm. high, slender, ascending. *Leaves* small (6 by 4 mm.), broad, elliptical-oblong to rotundate, obtuse, entire, narrowing to a short petiole. *Floral leaves* like the others. *Corolla* thrice as long as the calyx.

S. Patagon., by Hatcher, at Rio Sta. Cruz; Nordenskjöld in Valley of Rio Gallegos; Dusén in N. and E. Fuegia. Not in S. Fuegia; a steppe-plant, most characteristic of Patagon. (Dusén).

2. MARRUBIUM Linn.

Perennial herbs, with wrinkled, toothed or incised *leaves*, the floral leaves similar, and small flowers in axillary verticillasters. *Calyx* costate, 5–10-toothed. *Corolla-tube* included; upper lip nearly plane or concave. *Stamens* 4, the anterior pair the longer. Pollen-sacs at length confluent. *Nutlets* apically rounded.

Species 30, Old World; 1 in Amer. (introduced).

MARRUBIUM VULGARE Linn. Horehound.

Branches white-woolly. *Leaves* ovate or rounded, petioled, soft-woolly, greenish to white, crenate. *Calyx-teeth* 10, subulate, recurved, woolly. *Corolla* white, its lower lip 3-cleft, spreading.

(Eurasia; Amer.); Patagon.

3. CRUZIA Phil.

Calyx short, tubular, ecostate, *bilabiate*, with short, entire lips, and glabrous on the back. *Corolla* rather large, with ample tube, exsert; its upper lip broadly ovate, emarginate; its lower lip 3-lobed, the lobes rounded, the mid one twice as broad, bearded inside. *Stamens* 4, on the upper side; *anther-cells* confluent, at length round-reniform.

Species 1, viz.:

C. SERPYLLACEA Phil.

Low shrub, rough, hairy, with filiform branches. *Leaves* obovate-orbicular, short-petioled, entire, 3-nerved. *Flowers* shortly pediceled, with subulate bractlets.

S. Patagon., by Rio Sta. Cruz.

4. STACHYS Linn.

Herbs, with flowers clustered in terminal, dense or interrupted spikes. *Calyx* campanulate, 5–10-nerved, its 5 teeth subequal, not spreading. *Corolla* with narrow tube; its upper lip erect, concave, entire or emarginate; its lower lip spreading, 3-lobed, the mid-lobe broad. *Stamens* 4, ascending, the anterior the longer; *anthers* contiguous in pairs, their sacs diverging. *Style* 2-cleft. *Achenes* ovoid.

Species 200, in temperate and cold regions; in S. Afr. and Chili; not in Austr., nor in New Zeal.

S. CHONOTICA Hook. f.

Erect, hispid-pilose. *Leaves* petioled, oblong-lanceolate or ovate-oblong, obtuse or acute, cordate at base, crenate-serrate. *Floral leaves* bract-like, exceeding the calyx. *Verticillasters* 4–8-flowered, remote. *Calyx* hispid, its teeth ovate-awned. *Corolla* glabrous, its tube longer than the calyx.

(Close to *S. sylvatica* of Europe, but with narrower and more obtuse leaves, shorter petioles and less deeply cleft lower lip.)

(Chili); Chonos Archip.

5. HEDEOMA Pers. Mock Penny-royal.

Leaves small, entire or crenulate. *Flowers* small, in axillary clusters, crowded into terminal spikes or racemes. *Calyx* tubular, 13-nerved, villous inside. *Corolla* with erect upper lip and spreading lower lip. *Stamens* 2, ascending under the upper lip; staminodes 2 or none. *Style* 2-cleft. *Achenes* ovoid, smooth.

Species 15, America.

H. MULTIFLORA Benth.

Suffruticose, branching from the base; the branches pubescent. *Leaves* subsessile, linear, entire, revolute, punctate, scabrous. Verticillasters axillary, 2–6-flowered. *Corolla* twice as long as the hispid *calyx*. *Bracts* at the base of the pedicel 2, resembling leaves, but shorter than the pedicel. *Style* exserted, the under lobe involving the upper.

(Argentina; S. Brazil); N. Patagon. "Menta del campo," used medicinally, its decoction for diarrhœa.

6. SATUREIA Linn. Savory, Pampas Tea.

Herbs or shrubs, with small *leaves*, sometimes also with leaf-fascicles in the axils; and with bracted, purple *flowers* in terminal or axillary clusters. *Calyx* campanulate, usually 10–13 (–15)-nerved, naked or villous inside. *Corolla* with upper lip erect, flat, sometimes emarginate; lower lip spreading, 3-cleft. *Stamens* 4, connivent under the upper lip. *Style* 2-cleft above.

Species 18, one used as a garden herb; most in Mediterranean region.

1. S. DARWINII (Benth., sub *Micromeria*) Briq. (Plate XXIV, B.)

Low, diffuse, from a woody stock, pale or hoary. *Leaves* petiolate, ovate or obovate, narrow at base, scarcely revolute. Verticillasters 2-flowered. *Calyx* subsessile, 13-nerved, the teeth short, obtuse; villous inside. *Corolla-tube* short, exserted. *Fruit* with a crimson disk supporting the light-yellow achenes.

S. Patagon., by Peterson at Coy Inlet; by Dusén at Rio Sta. Cruz and in E. Fuegia; by Nordenskj., at Valley of Rio Gallegos. "Sta. Cruz Tea," "Pampas-tea," growing in patches everywhere over the pampas.

2. SATUREIA PUSILLA (Phil., sub *Micromeria*).

Low, 6 cm., much branching, the filiform *branches* and *leaves* glabrous. *Leaves* 3.5 mm. long, equalling the internodes, ovate, apically rounded, attenuate-petiolate. *Flowers* axillary, the verticillasters 2-flowered. *Peduncles* scarcely half as long as the calyx, 2-bracteolate. *Calyx* hispid, with white, spreading bristles, its tube 3–5 mm. long; its teeth acute, erect, subequal, triangular. *Anthers* and *stigma* subincluded.

Magellan, by Safford at Gregory Bay.

7. OCIMUM Linn.

Terminal racemes or *panicles* of rather small, white flowers, with exserted genitalia, and short *corolla-tube*. *Calyx* deflexed in fruit, with broad posterior tooth. Upper *corolla-lip* 4-cleft; lower entire. *Disk* of 1–4 glands. *Stamens* 4, anther-lobes confluent, 1-celled, reniform. *Achenes* dry, mucilaginous when wetted.

Species 60, tropical.

O. CARNOSUM Link. & Otto.

Stem herbaceous, subglabrous. *Leaves* petiolate, ovate, acutish, coarsely serrate, glabrous, somewhat fleshy. *Floral leaves* bract-like, deciduous. Racemes simple, many-flowered. *Calyx* campanulate, glabrous, its throat naked inside, the margins of the upper tooth reflexed and decurrent; the lateral teeth truncate, cuspidate; the lowest teeth setaceous-mucronate. *Corolla* purplish, scarcely longer than the calyx. Upper *filaments* with a basal tuft of hairs. *Achenes* triquetrous, black, smooth.

(S. Brazil); N. Patagon., by Rio Negro.

Family 99. SOLANACEÆ. Potato Family.

Usually herbs or shrubs, with regular, 5-merous, sympetalous *flowers*, often in cymes and bractless. *Stamens* 5, epipetalous, alternating with the corolla-lobes (except *Petunia*). *Ovary* superior, mostly 2-celled. *Style* slender, simple. *Fruit* a berry or capsule. *Seeds* many, with endosperm.

Species 1,250, in warm countries. Some in extra-tropical America, and in Australia.

Key to the Genera.

- *A.* Embryo curved more than a semicircle. Stamens all 5 fertile, subequal. Ovary 2-celled. Fruit a berry.
  - *b.* Filament fixed on the lower end of the small connective, which lies between the pollen-sacs; chief axis of plant elongated.
    - *c.* Corolla narrow tubular with narrow border, funnel- or salverform. Stamens inserted in the tube, not toothed at the insertion. Woody plants, usually with 1-flowered axillary flowers. . 1. *Lycium*, p. 699.
    - *c2.* Corolla rotate or campanulate, with broad border.
      - *d.* Anthers free, opening by longitudinal slits. Calyx close under the fruit, ribbed, bladderform, enclosing the berry. Corolla rotate. Flowers solitary. 2. *Physalis*, p. 705.
      - *d2.* Anthers connivent in a tube, or free and then opening by terminal pores; outer wall thicker than inner. 3. *Solanum*, p. 705.
  - *b2.* Filament dorsifixed in the anther, or, if joining the lower end of the connective, this runs up dorsally.
    - *c.* Shrubs, trees, or herbs, with elongated axis. Corolla crownless. 4. *Salpichroa*, p. 707.
    - *c2.* Herbs with short or creeping axis. Corolla funnelform, with spreading border and narrow tube. 5. *Jaborosa*, p. 708.
- *A2.* Embryo straight or only slightly bent (less than a semicircle). Seeds with endosperm. Stamens all fertile, subequal, or 1–3 shorter.
  - *b.* Fruit a few-seeded berry. Corolla lobes folded in the bud. Woody plants. 6. *Cestrum*, p. 708.
  - *b2.* Fruit a septicidal capsule, with many small seeds. Stamens unequal. Mostly with solitary, terminal or lateral flowers.
    - *c.* Shrub. Stamens shorter than the corolla. 7. *Fabiana*, p. 709.
    - *c2.* Herbs. No mid-lobes between the 5 corolla-lobes.
      - *d.* Filaments inserted midway or lower in the corolla-tube, which gradually widens upwards. Stigma shortly 2-lobed. Capsule with unparted, or nearly unparted valve. 8. *Petunia*, p. 710.
      - *d2.* Filaments inserted above the middle of the corolla-tube, which suddenly widens to the border. 9. *Nierembergia*, p. 711.
- *A3.* Capsule 1-celled, 1-seeded. (Ovary 2-celled.) Small shrubs with rosulate leaves, and erect, yellowish-white flowers; corolla-tube long, with short limb. 10. *Benthamiella*, p. 712.

1. LYCIUM Linn.

Shrubs or climbers *often spiny*, with small, alternate, entire *leaves*, often with leaf-fascicles in the axils; and white or greenish or purplish *flowers*.

Calyx small, persistent, but not enlarged in fruit. *Corolla-lobes* imbricate, not plicate. *Stamens* inserted in the tube; *anthers* opening by slits, often protruding. *Berry* globose to oblong, nearly dry.

Species 75, in warm and temperate regions. (Fig. in Eng. & Prantl, iv, 3*b*, p. 15, H–K.)

KEY TO THE SPECIES.

A. Unarmed.
  b. Leaves very narrow, capillary-linear, fleshy, pubescent, fascicled. Flowers solitary, small. Berry small, red. *capillare.*
  *b*2. Leaves narrow-linear, thickish, glabrous. Flowers solitary, on slender pedicels. Corolla-tube thrice as long as calyx. Branches feeble. *filifolium.*
  *b*3. Leaves small, linear-spatulate or narrower, glabrous, ciliate, fascicled.
    c. Flowers solitary, subsessile. *melanopotamicum.*
    *c*2. Flowers few or solitary, shortly pediceled. *acanthocladum.*
  *b*4. Leaves solitary, obovate to spatulate, glabrous or hairy. Flower solitary, axillary. Corolla twice as long as calyx. Prostrate, creeping. *repens.*
  *b*5. Leaves varying, fascicled, some separate. Corolla short, funnelform, lilac-white, turning yellow. Berries red. *salsum.*
*A*2. Nearly unarmed, glabrous. Leaves fleshy, small, spatulate, or long and narrow. Flowers solitary; corolla-tube twice as long as the hairy calyx; tufts and glands inside. Berry scarlet. *patagonicum.*
*A*3. Spinose shrubs.
  b. Tufts and glands in the corolla-tube.
    c. Leaves few, minute, obovate, fleshy. Flowers solitary, long-peduncled. Berry red. Glabrous plants. *infaustum.*
    *c*2. Leaves fascicled, minute, narrow-linear to spatulate. Flowers few on solitary short peduncles. Berry scarlet. Pubescent. *pubescens.*
  *b*2. Leaves small, clavate, solitary on the spines, or fascicled. Flowers solitary in the fascicles, short-pediceled.
    c. Flowers 5-merous, greenish. *chubutense.*
    *c*2. Flowers 4-merous, white. *durispina.*
  *b*3. Leaves linear-subulate, long attenuate-petiolate, fascicled. Flowers solitary in the fascicles. Corolla narrow-tubular, hairy. Berry scarlet. *elongatum.*
  *b*4. Leaves narrow-linear, minute, viscous, fascicled. Flowers solitary in the fascicles. Calyx tubular, cleft; corolla-limb short. *tenuispinosum.*
  *b*5. Leaves small, linear-spatulate. Calyx minute; corolla attenuate. Berries bright red; spines strong. *wilkesii.*
  *b*6. Leaves oblong-linear or subspatulate. Flowers usually in pairs from fascicles. Corolla thrice as long as calyx. *longiflorum.*
  *b*7. Leaves oblanceolate, fascicled. Flowers few pediceled. *ameghinoi.*

1. LYCIUM ACANTHOCLADUM Speg.

Brachycope (sc. corolla-tube cylindrical, lobes not half as long, calyx 4-toothed; filaments hairy). Woolly filaments, calyx 4-toothed, rough.

Shrub, with densely intricate branches, more or less thick and densely nodulose; the nodules tuberculiform, elliptical. *Leaves* fasciculate, linear-spatulate, obtuse, their base long-cuneate, sessile. *Flowers* few–gregarious or solitary in the leaf-fascicles. *Pedicel* glabrous, just exceeding the small calyx. *Corolla* lilac, broad funnelform, at least four times as long as the calyx. *Style* long, exsert.

S. Patagon., by Lago Argentino.

2. LYCIUM AMEGHINOI Speg.

Brachycope, perennial *spinose* shrub, with the nodes of the branches scarcely prominent. *Leaves* fasciculate, oblanceolate, attenuate both ways, thickish, glabrous. *Flowers* few–gregarious, shortly pediceled. *Corolla* white, twice as long as the calyx, glabrous.

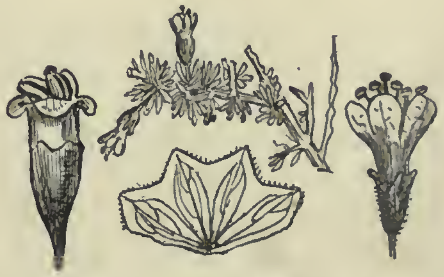
Patagon., by Golfo de San Jorge.

3. L. CAPILLARE Miers.

Shrubby, *unarmed;* branches virgate, very slender, horizontally divaricate, white-pubescent, with pale yellow lines decurrent from the nodes on both sides. *Leaves* fascicled (5 to 8), capillary-linear, finely pubescent, fleshy (8 by ¼ mm.). *Flowers* solitary, small, on slender peduncles. *Calyx* small, cup-like, 5-striate and 5-toothed, the teeth glabrous, acute. *Corolla-tube* 5-sulcate, the limb with 5 oblong segments, ciliolate. *Stamens* equal, exserted, glabrous. *Berry* the size of a small pea, red, supported by the cleft calyx.

(Argentina); N. Patagon.

FIG. 90.



Lycium chubutense, flowering branch, natural size; also magnified flower (on right). Also *L. durispina*, flower (on left) and calyx (below). (After Dusén.)

4. L. CHUBUTENSE Dusén.

Armed. Shrub, 1 m. high, much branching; the cortex pale gray, subrimose-glandular on young branchlets, which become spines. *Leaves* small, solitary on the spines, or fasciculate, attenuate, sessile below, mostly clavate, entire, glanduliferous. *Flowers* solitary in the leaf-fascicles, short-pediceled, with glandular hairs. *Calyx* subcylindrical, 5-lobed to the middle; its lobes narrow and slightly reflexed. *Corolla* funnelform, with cylindrical tube, much exceeding the calyx; pale green, with 5 rounded lobes. *Stamens* and style slightly exsert. (Fig. 90, except right figure.)

S. Patagon., at Puerto Madryn.

5. LYCIUM DURISPINA Dusén.

Shrub, under 1 m. high, intricately branching, very rigid, *spinose.* Cortex smooth, rimose. *Leaves* solitary or fasciculate, short, mostly clavate, obtuse, sessile, entire, fleshy, glandular. *Flowers* 1–3 in the fascicles, short-pediceled. *Calyx* short-cylindraceous, 4-cleft, the segments broadly triangular. *Corolla* white, cylindraceous, twice as long as the calyx, 4–lobed, with rounded, revolute segments. *Stamens* and *style* slightly exsert. (Fig. 90, right figure.)

Allied to *L. ameghinoi* Speg.

Patagon., near mouth of Rio Chubut, at Rawson.

6. L. ELONGATUM Miers.

Armed. Glabrous, branching shrub, the branchlets *spinescent,* flexuose, glaucous-gray. *Leaves* 4–8, fascicled, linear-subulate, obtuse, long, attenuate-petiolate, rather fleshy. *Flowers* solitary in the fascicles, short-pediceled. *Calyx* cylindrical, its subulate lobes as long as its tube. *Corolla* narrow-tubular, externally hairy, its lobes very short, rounded. *Stamens* unequal, included. *Style* exsert. Small, scarlet, ovate berry.

(Argentina); Patagon., by Rio Negro; Puerto Madryn.

7. L. FILIFOLIUM Gill.

Unarmed. Small shrub, with feeble branches on the ground, glabrous. *Leaves* narrow-linear (about 14 by three-fourths mm.), thickish. *Flowers* slender pediceled, solitary. *Calyx* cup-like, 2 mm. long, 5–6-costate and toothed, somewhat hairy. *Corolla-tube* thrice as long, with a beaded basal ring, 5–6 oblong lobes, shorter than its tube. *Stamens* 5–6, inserted in the narrowed part of the tube, protruding.

(Argentina, Tschayem); N. Patagon.

L. FILIFOLIUM MINUTIFOLIUM Miers.

Branches almost filiform. *Leaves* 4–5 mm. by one-half mm. *Calyx* 3 mm. long. *Berry* red, 4 mm. diam.

Patagon.

8. LYCIUM INFAUSTUM Miers.

Spinose. Glabrous shrub, intricately branching; the branchlets pale and angulate-ribbed. *Leaves* few, minute, obovate, fleshy, pale. *Flowers* solitary, long pediceled. *Calyx* small, urceolate, with 5 triangular teeth. *Corolla* funnelform, its segments ovate, shorter than its tube. *Stamens* long-exserted; 5 tufts of hair alternating with 5 staminal ciliated glands in the corolla-tube. *Berry* red, smaller than a pea.

(Argentina); N. Patagon.

9. L. LONGIFLORUM Phil.

Spinose and glabrous; the virgate branches emitting frequent spines 25–50 mm. long. *Leaves* fascicled, oblong-linear, basally attenuate, subspatulate. *Flowers* generally in pairs from the leaf-fascicles, with short, filiform *peduncle. Calyx* short, 5-toothed. *Corolla* tubular-funnelform, thrice as long as the calyx. *Stamens* 5, exsert, and longer than the style.

(Argentina); N. Patagon.

10. L. MELANOPOTAMICUM Nied.

Unarmed shrub, with virgate, costate branches. *Leaves* glabrous, ciliate-edged, 4–7 in a fascicle, from cup-like nodes; small, linear-spatulate, or linear, basi-attenuate, subsessile, 2–7 mm. long, their apex callous-mucronate. *Flowers* solitary on pedicels of 3 mm.

N. Patagon.

11. L. PATAGONICUM Miers. (*L. salsum patagonicum* O. Ktze.)

Nearly unarmed, glabrous, branching; the *branchlets* angulate, with tawny ribs. *Leaves* small, spatulate, or long and narrow, fleshy, thick-edged, short-petioled. *Flowers* solitary, the 5-toothed calyx and pedicel hairy. *Corolla-tube* funnelform, twice as long as the calyx; with a fleshy pilose ring outside below, and alternating hair-tufts and ciliated staminal glands inside. *Corolla-lobes* 5, oblong, ciliate, exceeding the tube. *Stamens* exsert. *Berry* ovate, scarlet.

Patagon., by Rivers Chico and Sta. Cruz.

12. L. PUBESCENS Miers. (*L. salsum pubescens* O. Ktze.)

Armed. Pubescent, branching; the *branches* horizontal, spinose, leafy. *Leaves* very small, fascicled, narrow-linear to spatulate, nearly glutinous-tomentose. *Flowers* few, from solitary, short peduncles. *Calyx* urceolate, with 5 linear teeth. *Corolla-tube* twice as long, having hair-tufts and staminal glands alternating; its lobes oblong, exceeding the tube. *Stamens* inserted low in the tube; anthers exserted. *Berry* small, scarlet.

Patagon.

13. LYCIUM REPENS Speg.

Brachycope (see *L. acanthocladum*). Calyx 5-toothed, filaments smooth. *Unarmed*, prostrate, creeping perennial, laxly branching. *Leaves* solitary, thickish, obovate or spatulate, often obtuse, glabrous or pubescent. *Flowers* solitary, axillary, peduncle bractless, shorter than the leaves. *Corolla* twice as long as the calyx. *Fruit* subglobose, black in the scarcely accrescent *calyx*.

S. Patagon., by Rivers Deseado and Sta. Cruz.

14. L. SALSUM Ruiz & Pav.

Leaves partly fascicled, partly separate. *Corolla* funnelform, short, deeply partite, lilac-white turning yellowish, the genitalia exsert. *Calyx* broad-toothed. Red *berries*. Varying as to pilosity and breadth of leaf. *Several varieties* are thus derived, extending over subtropical and cool parts of S. Amer.

L. SALSUM FLORIBUNDUM (Miers) O. Ktze.

Plant pubescent. *Leaves* plane linear.

(Argentina); Patagon.

15. L. TENUISPINOSUM Miers.

Armed. Intricately branching, viscous-hairy shrub, the branches tawny, and very aciculate-spinose. *Leaves* minute, fasciculate, narrow-linear. *Flowers* solitary from the fascicles. *Calyx* tubular, with jointed hairs, 5-cleft beyond the middle, their segments lanceolate, reflexed. *Corolla-limb* shorter than the tube. *Stamens* exserted, their insertion upwards in the tube.

(Argentina); N. Patagon.

16. L. WILKESII Ball.

With sharp, strong *spines*. *Leaves* small, linear-spatulate. *Calyx* minute, its lobes short. *Corolla* attenuate, subentire, rather crenate at its mouth. *Pedicels* short, elongating under the bright red *berries*.

N. Patagon., "Hurngan"; "Mataperro." Dogs are hurt by its spines.

2. PHYSALIS Linn.

Herbs, sometimes woody at base, with entire or sinuately toothed *leaves*, and mostly solitary, axillary *peduncles*. *Calyx* enlarged in fruit like a bladder around the pulpy *berry*. *Corolla* yellow, or white, or with a dark center, sub-campanulate, plicate. *Anthers* opening by slits.

Species 50, many in Amer.

P. VISCOSA Linn.

Perennial from a creeping stock; having dense, stellate, ashy pubescence. *Leaves* elliptic to ovate, obtuse, entire or wavy, sometimes basally cordate. *Peduncles* 1–2 mm. long. *Calyx* stellately hairy, its lobes triangular, short. *Berry* orange.

(S. United States to Argentina. Called Camanbu in N. Brazil; widely spread near inhabited places); N. Patagon.

3. SOLANUM Linn.

Herbs or shrubs, often *stellately hairy;* with the *stamens* inserted in the throat of the rotate *corolla*, and the *anthers* united into a cone and usually opening by *terminal pores*. *Ovary* 2-celled, becoming a globose *berry*.

Species 900, most in tropical America.

KEY TO THE SPECIES.

A. Leaves oblong-lanceolate, sinuate, scaly-tomentose, sometimes prickly. Raceme few-flowered, cymose, silvery. *elæagnifolium.*

*A*2. Leaves oblong, subsessile, basi-cuneate, apically 3-lobed, and laterally lobed, tomentose underneath. Terminally subumbellate, 2–3-flowered. *chenopodifolium.*

*A*3. Leaves ovate.

- *b*. Leaves rather large, toothed, glabrous. Stem and raceme forked. *furcatum.*
- *b*2. Leaves inequilateral, subentire, subglabrous. Umbel lateral, 3–10-flowered. Berry black. *nigrum.*

*A*4. Leaves pinnately divided.

- *b*. Leaf-segments linear, obtuse, mid one small. Upper leaves entire. Raceme terminal, forked. Berry scarlet. *maritimum.*
- *b*2. Mid leaf-segment large. Corymb terminal, few-flowered. *commersonii.*
- *b*3. Leaf-segments linear, entire or appendaged at base. Peduncles lateral, 1–few-flowered, nutant in fruit. *pryrethrifolium.*
- *b*4. Interruptedly pinnatisect, the alternate segments small. Corymbs terminal. Tuberiferous. *tuberosum.*

1. S. CHENOPODIFOLIUM Dunal.

Shrub. Branches obscurely sanguineous, subquadrangular, angulate-winged, pilose. *Leaves* subsessile, ovate-oblong, cuneate at base, apically 3-lobed; the lateral lobes tooth-like, mid-lobe long and large, obtuse, green-hairy above, ruddy-tomentose beneath. *Racemes* terminal, about 3-flowered; *flowers* pediceled, subumbellate.

(Argentina); N. Patagon.

2. SOLANUM COMMERSONII Dunal.

Stem herbaceous, pilose. *Leaves* petiolate, subpinnatisect; the terminal segment large; lateral segments unequal, mostly obtuse. *Racemes* terminal, corymbose, few-flowered. *Corolla-segments* narrow, acute.

(Montevideo); N. Patagon.

3. S. ELÆAGNIFOLIUM Cav.

Stems suffruticose, from a subterranean caudex, branching, scaly tomentose, hoary, spinose. *Leaves* petioled, oblong-lanceolate, sinuate-repand, discolored, scaly tomentose on both sides, unarmed or sparsely prickly; silvery and nervose underneath. *Racemes* few-flowered, cymose, silvery.

(Mexico to Argentina); N. Patagon., "following civilization southwards of Buenos Ayres as a troublesome weed."

4. S. FURCATUM Dunal.

Stem herbaceous, subdichotomous, angulate-toothed, glabrous. *Leaves* rather large, ovate, dentate, glabrous. *Racemes* furcate.

(Peru); W. Patagon.

5. S. MARITIMUM Meyen.

Pulverulent-scabrous. *Stem* herbaceous (?), compressed-trigonal, much branching, divaricate. *Leaves* succulent, pinnatipartite, 15 mm. long, the segments linear-obtuse, mid one short, laterals entire or 1-toothed downwards at base. Upper leaves linear, entire. *Raceme* terminal bifid, divergent, *flowers* nodding. *Corolla-lobes* acute, blue. *Fruit* scarlet. Near *pyrethrifolium* Gris.

(Chili); S. Patagon., by Rio Sta. Cruz.

6. S. NIGRUM Linn. Black Nightshade.

Erect, branching annual, glabrous or with simple hairs. *Leaves* petioled, ovate, inequilateral, mostly entire, acute. *Peduncles* lateral, umbellately 3–10-flowered. *Calyx-lobes* oblong, spreading, shorter than the white *corolla*, persisting under the black, shining *berry*.

(Old and New Worlds, in waste places.) Greatly varying as to the leaf-margin and as to the degree of glabrescence.

SOLANUM NIGRUM FRUTESCENS.

N. Patagon.

S. NIGRUM HUMILE. (*S. humile* Salisb. Prodr. 134.)

N. Patagon.

7. S. PYRETHRIFOLIUM Gr.

Unarmed, branching, diffused annual herb, 30 cm. high,strigose, pubescent. *Leaves* pinnatipartite, attenuate to a slender petiole; parts 3–5 pairs, linear, entire, or appendaged at the base. *Peduncles* lateral, 1–few-flowered, cernuous, reflexed and nodding in fruit. *Calyx* small, 5-cleft, a little shorter than the corolla. *Anther-pores* oblong, introrse.

(Argentina); N. Patagon.

8. S. TUBEROSUM Linn. Potato.

Unarmed, tuberiferous herb, with interruptedly pinnatisect *leaves*, their segments alternately larger and smaller; and terminal *corymbs* on articulate pedicels, having plicate, 5-angled *corolla*.

Chonos Archip.

S. TUBEROSUM VULGARE.

Pubescent, stem robust. *Leaves* large, and *flowers* rather large. *Calyx-lobes* broad-ovate, acuminate.

Chonos Archip., there called Papas, supposed to be the origin of the cultivated potato. Other varieties, with smaller flowers, in Peru, Chili, and Argentina, all called Maglia, produce tubers under cultivation.

4. SALPICHROA Miers.

Branching herbs or shrubs, with long-petioled, entire, mostly small *leaves*, and solitary white or yellow *flowers*. *Calyx* not enlarged in fruit. *Corolla* crownless, its lobes induplicate, valvate. *Anthers* dorsifixed, opening by slits. *Disk* fleshy. *Berry* ovoid. *Seeds* compressed.

Species 10, in extra-tropical S. Amer.

S. RHOMBOIDEA Miers.

Procumbent or climbing undershrub. *Stems* pale yellow. *Branches* oppositifoliose, flexuose, subangulate, green, hairy. *Leaves* ovate-rhomboid, rather unequal at base, hoary above, pale underneath. *Peduncles* slender, hairy, rather pendulous. *Corolla* glabrous, white, its lobes oblong-linear, acute, reflexed.

(Brazil, and spreading southwards from Argentina); N. Patagon.; Magellan. (Fig. in Eng. & Prantl, iv, 3*b*, p. 26, K, L.)

5. JABOROSA Juss. (including *Himeranthus* Endl.).

Prostrate creeping or cespitose perennials, often from a thick rhizome, with toothed or pinnatified *leaves*, and white or yellowish *flowers*, usually on long *peduncles*. *Calyx* campanulate, scarcely enlarging in fruit. *Corolla* often hairy inside. *Disk* small or none. *Anthers* opening by slits. *Stigmatic* lobes 2–5, oblong, conniving. *Berry* globose, not juicy.

Species 9, chiefly in Bolivia, Chili, Argentina.

1. J. MAGELLANICA Benth. & Hook. (Gris. sub *Himeranthus*).

Rhizome napiform. *Stem* prostrate, diffuse, woolly. *Leaves* on a long, woolly petiole, runcinate, fleshy, glabrous, the segments with mucronate teeth. *Peduncles* extra-axillary, aggregate, cernuous in fruit, shorter than the petioles. *Bracteoles* minute, hairy. *Calyx* 5-partite, short. *Corolla-limb* twice as long as its tube, the segments ovate-oblong, exceeding the didymous anthers and clavate *style*. *Berry* biglobose, smooth, with many reniform *seeds*.

Magellan; E. Fuegia (Dusén); Killik Aike (Barnum Brown).

2. J. RUNCINATA Lam. (Endl. sub *Himeranthus*).

Leaves oblong, lyrate-runcinate, petiolate. *Peduncles* shorter than the leaves. *Rhizome* woody, creeping and going deep.

(Argentina); N. Patagon.

6. CESTRUM Linn.

Shrubs or low trees, glabrous or hirtellate, or stellately tomentose; with alternate, entire *leaves*, and *cymes* of white, red, or orange flowers at the axils, or becoming paniculate at the ends of the branches. *Corolla-lobes* induplicate-valvate, spreading in anthesis. *Anther* short, dorsally apposed after dehiscence. *Stigma* subpeltate. *Ovules* few. *Berry* not juicy.

Species 140, from Florida and Mexico, and the West Indies through S. Amer.

CESTRUM PARQUI L'Her.

Stems numerous, erect, branching, floriferous. *Leaves* short-petioled, narrow-lanceolate, acute both ways, subundulate, glabrous; *younger leaves* of the axillary buds *like stipules*. *Panicles* terminal, erect, leafy and bracted, containing spike-like *racemes*.

(In moist parts of Chili; a fetid shrub, the flowers smelling by night; "in south of the Province of Buenos Ayres," J. Ball); probably in N. Patagon.

7. FABIANA Ruiz & Pav.

Erect, heath-like shrubs, with small, crowded *leaves*, and numerous short-pediceled *flowers*, terminal or oppositifoliose. *Calyx-teeth* mostly ovate, obtuse. *Corolla-tube* long, enlarged upwards, its limb short, with induplicate-valvate lobes. *Anthers* short, their lobes dorsally apposed, at length subglobose. *Disk* fleshy. *Stigma* dilated. *Capsule* oblong, 2-celled, each cell 2-valved. *Seeds* numerous.

Species 52, Chili and Brazil, and southwards.

1. F. HIERONYMI Nied.

Shrub branching from below, the branches thick, flexuose, cylindrical. *Young branches* yellow-green, granulate (not viscid). *Leaves* sessile, scaleform, semiorbicular, only half mm. long, glabrous, 3 larger under the calyx. *Flowers* terminal, solitary, subsessile. *Calyx* glabrous, persisting under the subcylindrical, glabrous capsule. *Seeds* small, brown.

N. Patagon.

2. F. IMBRICATA Ruiz & Pav.

Short, leafy shrub, with erect branching stem and branchlets. *Leaves* minute, 1 mm. long, ovate, sessile, concave, scale-like, thickish, imbricating. *Flowers* along the branchlets, solitary, sessile. *Calyx* cup-like, 5-cleft; its segments obtusish. *Corolla-segments* short, obtuse, reflexed, white or somewhat violet. *Ovary* with a red, fleshy, bipartite, basal nectary.

Habit of tamarisk. (Fig. in Eng. & Prantl, iv, 3*b*, p. 31, D, E, F.)

(Chili, rocky places and sands by streams); Patagon., Chubut.

3. F. PATAGONICA Speg.

Denuded, viscous, scarcely subpuberulous. *Branchlets* erect, straight, terete, remotely subnodulose. *Leaves* small, narrowly linear, spatulate, soon deciduous. *Flowers* terminal on the branches, subracemosely erect on a very short, 2-bracteolate peduncle.

Patagon., by Golfo de San Jorge; Puerto Madryn.

4. FABIANA PECKII Nied.

Branching shrub; all the *branches* approximate and *ending in solitary flowers or racemes*. *Cortex* glabrous, obscurely spotted. *Leaves* small, narrow-linear, 4 by a half mm., obtuse, sessile, deciduous. *Flower* on a nearly leafless branchlet. *Calyx* 5-lobed, its lobes triangular-acuminate. *Ovary* subovate, in a fleshy 2-lobed disk. Fruiting calyx 5 mm. by 2 mm., glabrous, gray.

N. Patagon.

8. PETUNIA Juss.

Viscid, pubescent herbs, with entire *leaves* and axillary or terminal, solitary, usually large, white to purplish *flowers*. *Calyx* 5-partite, with narrow segments. *Corolla* funnel- to salverform, plicate. *Stamens* inserted in the throat of the corolla, 4 and didynamous, or 5 and unequal. *Disk* fleshy. *Ovary* and capsule 2-celled. *Style* filiform; stigma 2-lamellate. *Seeds* many, rugose.

Species 12, S. Amer.

1. P. AXILLARIS (Lam. sub *Nicotiana*, 1797; *P. nyctaginiflora* Juss., 1803) Britton.

Stout, 30 cm. high. *Leaves* ovate to obovate, rather blunt, sessile and opposite near the flowers; alternate and becoming short-petioled downwards. *Peduncles* slender, about 7 cm. long. *Calyx-segments* narrow. *Corolla-tube* slightly enlarged upwards, thrice as long as the calyx, the limb abruptly spreading to 5 cm. broad, with rounded lobes.

(S. Brazil; Argentina); N. Patagon. Cultivated in gardens, and escaped everywhere. (Fig. in Britt. & Br. iii, p. 141.)

2. P. HUMIFUSA Dunal.

Herbaceous annual, with prostrate *stems*, 5–10 cm. long, scarcely puberulent and glandulous. *Leaves* oblong-linear, 30 mm. long, subspatulate, repand, obtuse, attenuate-petiolate, the petiole subamplexicaul. *Flowers* solitary, axillary, long-peduncled; peduncles filiform, not as long as the leaf. *Calyx* subcampanulate, deeply 5-cleft, the segments oblong-lanceolate, obtuse, lineate. *Corolla* tubular within the calyx-tube, slender, then enlarged and funnel-campanulate. *Stamens* unequal, inserted in top of tube, filiform, puberulous. *Style* straight, half as long as corolla.

(Chili); Patagon., near Rio Sta. Cruz.

9. NIEREMBERGIA Ruiz & Pav.

Low, perennial herbs, generally slender and glabrous, with entire *leaves* and often violet or pale showy *flowers*. *Corolla-tube* long and slender, with an enlarged, campanulate throat, and a plicate, 5-lobed, spreading limb. *Stamens* exserted, 4 of them didynamous, the fifth small; *anthers* connivent. *Disk* cup-like or none. *Stigma* transversely half-moon-shaped. *Capsule* 2-valved, the valves bifid. *Seeds* many.

Species 20, Mexico and S. Amer. (Fig. in Eng. & Prantl, iv, 3*b*, p. 31, C, Q, R.)

1. N. HIPPOMANICA Miers.

Scabrid-pilose. *Stem* woody, from a thick root, with short, ascending branches. *Leaves* crowded, spatulate-linear, acuminate, callous-mucronate. *Flowers* small, subpaniculate. *Calyx* 10-carinate; its lobes linear, spreading. *Corolla-tube* twice as long as the calyx, glandular-hairy; its limb broad-campanulate, and lobes rounded, rose-white.

(Argentina, Bahia Blanca, called Chuchu); N. Patagon., on stony ground. Poisonous to horses.

2. N. PATAGONICA Speg.

Pulvinate-cespitose shrub. *Leaves* minute, linear, sessile, obtuse, thick, rigid, glabrous, viscid. *Flowers* solitary on the ends of the branches; with pedicels twice as long as the leaves. *Calyx* campanulate, its lobes short, obtuse. *Corolla* funnelform, large, with 5 broad lobes, yellow, purple-veiny. Very beautiful and peculiar.

Patagon., by Golfo de San Jorge.

3. N. RIGIDA Miers.

Glabrous. Woody *root*. *Stems* 2 meters high, branching, erect, flexuose, filiform, striate. *Leaves* narrow-linear, 3 cm. long, 3-costate, mucronate-awned. *Peduncles* solitary, short, 6 mm., oppositifoliose. *Calyx* 10-costate, its segments awned, thrice as long as its tube. *Corolla-tube* pubescent, its lobes rounded.

(Argentina); N. Patagon., by Rio Negro.

10. BENTHAMIELLA Speg.

Small shrubs, with thick, rosulate *leaves*, and separate, erect, yellowish-white *flowers*. *Calyx* campanulate, 5-toothed. *Corolla* with long, gradually enlarging tube, and short, spreading, 5-lobed limb. *Stamens* 5, unequal. Ovary 2-celled. *Capsule* thin-walled, obscurely 4-valved, 1-celled, 1-seeded.

Species 5, Patagon.

1. B. ACUTIFOLIA Speg.

Leaves fasciculate-imbricate, erect, subrigid, linear, entire, triquetrous at apex, callously acute, whitish-mucronate. *Flowers* sessile in the upper axils, not exceeding the leaves, solitary, 2-bracted. *Calyx-lobes* as long as the tube. *Corolla* twice as long as the calyx, ochroleucous.

S. Patagon., by Rio Sta. Cruz; rare.

2. B. LONGIFOLIA Speg.

Leaves fasciculate, imbricate, not rosulate, nor rigid, linear, entire, obtuse, the apex scarcely callous. Flowers long-exsert from the upper axils, solitary, 2-bracteolate. *Calyx-lobes* shorter than the tube. *Corolla* ochroleucous, thrice as long as calyx.

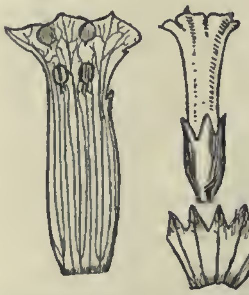
Patagon., by Golfo de San Jorge and Rio Sta. Cruz.

3. B. NORDENSKJOLDII N. Br. & Dusén.

Leaves erect, imbricate, densely crowded, about 6–9 mm. long by 1–5 mm. broad, linear-acute, concave above, subcarinate below, glabrous. *Flowers* solitary in the axils of the upper leaves, with 2 bracts, 4 mm. long by 1 mm. broad. *Calyx* 4 mm. long. *Corolla* 8–10 mm. long, tube cylindrical, apex plicate, with 5 spreading, truncate lobes. *Stamens* included. *Cells* of ovary 4–6-ovulate. (Fig. 91.)

S. Patagon., by O. Nordenskjöld. Leaves narrower and more acute than in *B. patagonica.*

FIG. 91.



Benthamiella nordenskjoldii. Flower; its interior and expanded calyx, all magnified. (After Dusén.)

4. B. PATAGONICA Speg.

Branches woody, 5 mm. thick, naked below, with rimulose, fuscous cortex and white wood; above irregularly and laxly branching, and the upper branches rosulate-leafy with linear, rigid, spreading, apically truncate *leaves*. *Leaf-bases* dilated to a pericladium, concave ventrally, costate-carinate dorsally. *Flowers* long-exsert from the upper axils; sessile, solitary, 2-bracted. *Calyx* short (3 mm.), 5-cleft, the lobes as long as the tube. *Corolla* tubular, white, 8 mm. by 1.5 mm.

S. Patagon., by Rio Sta. Cruz.

5. BENTHAMIELLA PYCNOPHYLLOIDES Speg.

Cespitose. *Leaves* minute, ovate-scaleform, densely imbricate, entire, apically thick, green, acute, basally dilated, and with woolly edge. *Flowers* long, exserted from upper axils, sessile, solitary, 2-bracteolate. *Calyx-lobes* equalling the tube. *Corolla* pale-violascent, twice as long as the calyx.

Patagon.

Family 100. SCROPHULARIACEÆ. Snapdragon Family.

Herbs, shrubs or trees, with exstipulate *leaves* and perfect, sympetalous, mostly zygomorphic *flowers*. *Stamens* epipetalous, mostly 4 and didynamous, sometimes only 2, rarely 5. *Ovary* superior, 2-celled (rarely 1-celled), the cells being antero-posterior, with axial placentæ. *Style* 1, often apically 2-lobed. *Fruit* capsular. *Seeds* numerous, endospermous.

Species 2,300, chiefly in temperate climates.

KEY TO THE GENERA.

A. The 2 dorsal corolla-lobes (or by their fusing the upper lip), cover the lateral lobes in the bud. Basal leaves or all opposite. Fifth stamen changed or none. (ANTIRRHINOIDEÆ.)
  b. Corolla 2-lipped, the lips urceolate, concave. Stamens 2, dehiscing by slits. 1. *Calceolaria*, p. 714.
  b2. Corolla regular or 2-lipped, its lips flat or convex. Fruit a many-seeded capsule.
    c. Corolla spurred, having a tube and a palate nearly closing the throat. Flowers terminally racemed or spicate. 2. *Linaria*, p. 719.
    c2. Corolla not spurred, nor basally saccate. Inflorescence usually simple. Stamens all inserted in the corolla-tube; anthers 2-celled. Calyx 5-toothed or 5-cleft. Capsule 4-valved.
      d. Capsule loculicidal. Stigma capitate. Seeds large, few. Erect shrubs. Leaves few, often reduced. 3. *Monttea*, p. 719.
      d2. Capsule loculicidal and septicidal. Seed-ridges free or coalescing. Anther-cells partly fused. Herbs, woolly or glandular. 4. *Stemodia*, p. 719.
    c3. Corolla regular. Calyx 5-parted, its dorsal lobe longer or broader than the others. Anther-cells touching or ultimately fusing. 5. *Monniera* (*Bacopa*), p. 720.

c4. As the preceding, but calyx prismatic, 5-angled. 8. *Mimulus*, p. 721.

c5. Corolla not spurred nor saccate. Anther-cells usually fused. Stigma capitate. Minute herbs.

d. Leaves opposite; internodes distinct. Corolla 2-lipped, 4–5-lobed. Calyx 5-parted. Stamens 2, anther-cells divaricating. 6. *Bryodes*, p 720.

d2. Leaves basal, or apparently so, the internodes being short. Calyx 5-toothed. Stamens 4, the pollen-sacs fusing. 7. *Limosella*, p. 720.

A2. The 2 dorsal corolla-lobes (or the upper lip) covered in the bud by one or both the lateral lobes. (Rhinanthoideæ.)

b. Corolla-lobes all flat and spreading, or the dorsal pair erect.

c. Pollen-sacs finally united apically. Dorsal corolla-lobes often upright. Autophytes.

d. Corolla-tube short or none. Stamens 2 or 4, subequal, rarely 6–8.

e. Stamens 4–5, rarely more, pollen-sacs fused. Corolla 4-merous, rotate; with no tube. Erect herbs or shrubs, with opposite leaves.
9. *Scoparia*, p. 721.

e2. Stamens only 2. Leaves, at least the lower, opposite.
10. *Veronica*, p. 722.

d2. Corolla with long tube, or campanulate. Stamens 4, didynamous. Calyx 5-parted.

e. Leaves opposite; flowers almost regular. Low herbs. 11. *Ourisia*, p. 723.

e2. Leaves alternate. Corolla-tube ventricose, gradually widening. Stigma 2-lobed. Coarse erect herbs and undershrubs. 12. *Digitalis*, p. 725.

c2. Pollen-sacs distinct. Corolla-lobes spreading flat. Calyx 5-toothed, the teeth not exceeding the tube. Stamens not protruding, their filaments hairy. Erect herbs or half-shrubs, often more or less parasitical. 13. *Gerardia*, p. 726.

b2. Corolla lobes forming a helmet-like upper-lip, with reflexed border; corolla-tube nearly straight. Stamens 4; pollen-sacs equal. Stigma capitate. Usually small, erect herbs, often more or less parasitical; with simple or palmatifid leaves and flowers in terminal spikes. 14. *Euphrasia*, p. 727.

1. CALCEOLARIA Linn.

Herbs or shrubs, with generally opposite or whorled leaves, and cymose or rarely 1-flowered peduncles, with yellow, white or purplish flowers.

Calyx slightly adhering to the ovary, 4-partite, its parts valvate. *Corolla-tube* nearly obsolete; its limb concave, 2-lipped, the lips entire, concave or shoe-like; the anterior lip being usually large and inflated. *Stamens* 2. *Stigma* small. *Capsule* ovate-conical, septicidal, with 2-cleft valves. *Seeds* numerous, striate, marginless.

Species 140, chiefly American, from Mexico by the Andes to Magellan; 2 in New Zealand.

Key to the Species.

A. Lower corolla-lip contracted at the base.

b. The contracted part long. Leaves long-attenuate, subentire. Stem very short. Peduncle scape-like, 1-flowered.

c. Subglabrous. Leaves ovate. *uniflora.*
*c*2. Subvillous. Leaves lanceolate. *lanceolata.*
*c*3. Glandular, hairy. Leaves villous, ovate-spatulate. *fothergilli.*
*b*2. The contracted part short.
c. Scape long, 2–4-flowered. Leaves radical, large, ovate-rhomboid or spatulate, many toothed and many-nerved. *biflora.*
*c*2. Scape short, 1–3-flowered. Leaves broad-oblong, subentire. Lower corolla-lip large, red-spotted. *darwinii.*
*c*3. Leaves crowded at base, subovate, erose-dentate, attenuate-petioled; upper leaves few. Corymb few–many-flowered. *racemosa.*
*c*4. Leaves subradical; they and peduncles subglandulous. Leaves rhomboid-lanceolate. Scapes 10 cm., 2–4-flowered. *bergii.*
*A*2. Lower corolla-lip scarcely contracted. Leaves ovate. Flowers few. Stems slender.
b. Leaves of 3 kinds; the radical with long petioles, the cauline with short petioles, and the floral sessile. *bellidifolia.*
*b*2. Leaves all radical, hispid underneath. *filicaulis.*
*A*3. Lower corolla-lip very inflated. Leaves mostly radical, petiolate.
b. Leaves ovate or rhombic, 2-toothed or incised, villous. Quasi-scape tall, branching. *nudicaulis.*
*b*2. Leaves 25 mm., long-petioled. Flowers 1–5; corolla large, spotted, incurved. *polyrrhiza.*
*b*3. Leaves ovate-oblong, repand-serrate; a few on the bifid stem. Subumbellately few-flowered. Pubescent. *volkmanni.*
*A*4. Leaves rosulate, ovate-oblong, acute. Scape tall, bractless, 4-flowered. Calyx-segments triangular. Corolla? *palænæ.*

1. CALCEOLARIA BELLIDIFOLIA Gillies.

Cespitose herbs, with slender, flexuose stems 5–20 cm. high, ovate-entire *leaves*, some radical and with long petioles, others cauline, narrowing to a short petiole, and others floral sessile. *Flowers* few, laxly corymbose, the pedicels 1-flowered. *Calyx-segments* ovate, rather obtuse; upper *lip of corolla* scarcely as long as the calyx, the lower large, orbiculate, with a short opening and a scarcely contracted base.

(Chili.)

C. BELLIDIFOLIA ANGUSTIFOLIA Speg.

Leaves oblanceolate, acutish, with minute, spreading puberulence only on the upper surface and margin.

Patagon., Chubut, in elevated swamps by Lago Fontana.

2. C. BERGII Hieron.

Minutely glandular, pubescent herb, cespitose, with several short *stems* and scapiform peduncles. *Leaves* subradical, glandulous-pubescent underneath, subglabrous above, rhomboid-lanceolate, subobtuse, entire or obscurely crenulate. *Peduncles* 10 cm. high, minutely glandular, 2–4-flowered, *peduncles* to 12 mm. long, bracts very small, oblong, 1 mm. long, minutely glandular. *Flowers* in anthesis suberect. *Calyx* 6 mm. long, 4-parted to middle or deeper, minutely glandular, lobes ovate, subobtuse. *Corolla* yellow. Upper lip as long as the calyx, lower 15 mm. long, dependent, obovate, contracted at base, open above the middle, internally on the sides and externally on the back, having small, purple spots. *Anther* cells ovate.

Differs from *C. polyrrhiza*, *darwinii* and *lanceolata* by glanduliferous *leaves* and *peduncles;* from *C. nana* and *fothergilli* by its many-flowered scapes.

S. Patagon., common by Rio Sta. Cruz, October.

3. CALCEOLARIA BIFLORA Lam. (1783; *C. plantaginea* Smith, 1789).

Herbs, with 4–5 rather large, radical *leaves*, which are ovate-rhomboid or spatulate, dentate or incised, many-nerved, villous to glabrate. *Peduncles* long, leafless, laxly 2–4-flowered, the pedicels 5 cm. long. *Calyx* viscid, its segments ovate, obtuse. *Corolla* yellow, with its upper lip shorter than the calyx, its lower lip dependent, long-obovate, spreading, contracted towards its base.

S. and W. Patagon.; Chili to Fuegia; by Hatcher at head of Rio Chico de la Sta. Cruz, in fruit Feb. 9, 1897; by Dusén in N. and E. Fuegia.

"Abundant from Valparaiso to Magellan, but confined to a narrow oblique belt. In the Northern part of its range it is chiefly west of the Andes; in the Southern part it is Eastward, thus avoiding equally the wet, cold, stormy latitudes of Southwest Chili and Fuegia, and the arid plains of Patagonia." (J. D. Hooker.)

"Belongs to the steppe-flora; and usually grows in thickets formed by *Chiliotrichum diffusum* and *Baccharis patagonica;* but it avoids parts of the steppes which are free of shrubs." (Dusén.)

C. BIFLORA MAGELLANICA (Clo.).

Stems few, simple, 2–3-flowered. *Leaves* rhombic-cuneate, denticulate.

Magellan; S. Fuegia, Valley of Olivaia.

4. C. DARWINII Benth.

Glabrous. Stem short. *Leaves* broad-oblong, entire, or remotely few-toothed. Peduncles to 7 cm., scapiform, 1–3-flowered. *Calyx-segments* minutely puberulous, broad-ovate, obtuse. *Corolla* yellow, with upper lip equalling the calyx; lower lip dependent, very large, broad-ovate, red-spotted; the base contracted. *Anther-lobes* ovate.

S. Patagon., at Coy Inlet (Peterson), "on pampas everywhere," Nov. 16, at mouth of Rio Sta. Cruz (Dusén). Scapes usually with one terminal flower, and a pair of younger lateral flowers about 20 mm. below.

5. CALCEOLARIA FILICAULIS Gay.

Stems 1–2, erect, long, slender, naked. *Leaves* radical, ovate, petiolate, or attenuate to a short petiole, obsoletely toothed, hispid underneath, subciliate. *Corymb* terminal, simple or geminate, few-flowered. *Corolla* puberulous; its upper lip shorter than the hispid calyx; its lower larger, obovate, erect, scarcely contracted at the base, shortly open.

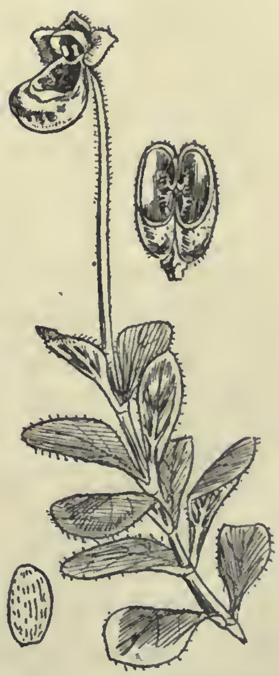
(Chili); Patagon.

6. C. FOTHERGILLI Sol.

Glandular-pubescent herb, with very short *stem*. *Leaves* petiolate, ovate-spatulate, entire or obsoletely crenate, villous. Peduncles scape-like, 1-flowered. *Calyx-segments* broad-ovate to orbiculate, obtuse. *Corolla* with upper lip shorter than the calyx; lower lip dependent, long-obovate, red-spotted, its base long-contracted, and open to beyond the middle. (Fig. 92.)

Magellan, Falklands, "abundant and pretty."

FIG. 92.



Calceolaria fothergilli.—Plant in flower, slightly reduced; also section of capsule, magnified, and magnified seed. (From *Flora antarctica.*)

7. C. LANCEOLATA Cav.

Subvillous herbs, with very short *stem*. *Leaves* lanceolate, long-attenuate at base, subentire. *Peduncles* scapiform, 1-flowered. *Calyx-segments* ovate, acute, subvillous. *Corolla* with short upper lip; lower lip long, its base long-contracted, open to above the middle.

Patagon., at Golfo de San Jorge; Puerto Deseado (also cited in the Falklands along with *C. polyrrhiza*, but quære).

8. C. NUDICAULIS Benth.

Herbaceous, with petiolate, radical *leaves*, ovate or rhombic, 2-toothed or partly incised, villous on both sides. *Stem* scape-like, erect, to 60 cm.

tall, branching upwards. *Corymbs* few-flowered. *Calyx* hoary-villous, its segments ovate, rather obtuse. *Corolla* with upper lip twice as long as the calyx; lower lip very inflated, its base briefly open.

(Chilian Andes); Patagon.

9. CALCEOLARIA PALÆNÆ Phil.

Leaves rosulate, short-petioled, ovate-oblong, acute, nervose. *Scape* naked, tall, 4-flowered, no bracts at base of pedicels. *Calyx-segments* broadly triangular. Corolla, etc.?

S. Chili, by Rio Palena.

10. C. POLYRRHIZA Cav.

Leaves more than 25 mm. long, on long petioles. *Scapes* 1–3–5-flowered. *Calyx-segments* ovate or oblong, scarcely obtuse. *Corolla* rather large, spotted, incurved, not dependent. *Anther-lobes* oblong.

S. Patagon., at Puerto Deseado; Falklands.

11. C. RACEMOSA Cav.

Puberulous, subviscous herbs. *Leaves* crowded near base, ovate or somewhat oblong, erose-dentate, attenuate-petiolate; upper leaves few. *Corymb* lax to many-flowered. *Corolla* with upper lip scarcely exceeding the calyx; lower lip obovate, briefly contracted at base, open to beyond the middle.

S. Patagon., at Puerto Deseado.

12. C. UNIFLORA Lam. (1783; *C. nana* Smith, 1789).

Glabrous or minutely puberulous. *Stem* very short. *Leaves* petioled, ovate, long-attenuate at base, entire or crenulate. Peduncles scape-like, about 7 cm. high, 1-flowered. *Calyx-segments* broad-ovate, obtuse. *Corolla* with upper lip rather shorter than the calyx, the lower dependent, obovate, long-contracted at the base, open to beyond the middle.

S. Patagon., Magellan, by Port Gregory; by Hatcher at Punta Arenas; S. Patagon., at Coy Inlet (Peterson, "color brownish-yellow"); Franchet says "not found recently at Magellan, unless haply by M. Hariot." Dusén found it in N. and E. Fuegia, and calls it "a common steppe-plant."

13. C. VOLKMANNI Phil.

Pubescent herb, with *leaves* mostly radical, ovate-oblong, 10 by 3 cm., attenuate to a short petiole, obscurely repand-serrate. Stem 20 cm. high, few-leaved, apically bifid. *Corymb* subumbellate, few-flowered. Upper lip of *corolla* rather large, twice the calyx. Lower lip suborbicular, slightly open. *Style* nearly 3 times as long as the stamens.

(Chili); Patagon?

2. LINARIA Juss. Toad-flax.

Herbs, with pinnately-nerved, mostly alternate leaves, and terminal bracted racemes or spikes, and zygomorphic flowers, 2-lipped with a *palate*, and with a *spur* (long or reduced or obsolete). *Stamens* 4, didynamous.

Species 150, mostly Eurasian.

L. CANADENSIS (L.) Dumont.

Stems erect or ascending, branched. *Leaves* linear, or linear-oblong. *Spikes* long. *Corolla* blue to white, long-spurred.

(U. S., and Central to S. Amer.); Patagon.?

3. MONTTEA Gay. (*Oxyclados* Miers.)

Glabrous shrubs, sometimes with spinescent branches and reduced leaves. *Flowers* small, axillary. *Corolla-tube* cylindrical, limb 2-lipped; posterior, exterior lip 2-cleft, anterior 3-cleft, the lobes broad, spreading. *Stamens* didynamous with a small staminode. *Capsule* hard, 4-valved; but *seeds* by abortion only 1–2, large, without endosperm.

Species 3, Chili.

M. APHYLLA (Miers) Gay.

Rather robust. *Leafless.* Branches irregularly angular, the epidermis with minute foveoles, shining reddish, ending in a spine; the younger branches opposite, spiniform, bearing 2–3-fascicled flowers having glabrous *calyx*, pubescent, pink *corolla* and *drupe.* Leaves wanting, except minute, bract-like leaves under the flowers.

(Argentina); N. Patagon.

4. STEMODIA Linn.

Woolly or glandular herbs or shrubs, with opposite or 3–4-whorled *leaves* and bluish *flowers* either axillary-solitary, or in terminal, bracted *spikes.* *Corolla-tube* cylindrical; upper lip broad, lower lip 3-lobed. *Stamens* didynamous, the anther-lobes stipitate. *Seeds* many.

Species 30, in S. Amer., Africa, Asia and Australia.

1. STEMODIA LANCEOLATA Benth.

Leaves lanceolate, amplexicaul, acuminate, serrulate. *Flowers* in leafy *spikes.*

(Argentina); N. Patagon. ?

2. S. PALUSTRIS St. Hil.

Leaves linear to sublanceolate, basi-attenuate. *Flowers* axillary, with much dilated *style.*

(S. Brazil); N. Patagon., by Rio Negro.

5. MONNIERA P. Browne (1755). (*Bacopa* Aubl. 1775; *Herpestis* Gaert.)

Herbs, with opposite *leaves* (or in submerged forms often dissected) and axillary, pediceled *flowers.* Upper *calyx-segment* very large and cordate. *Stamens* 4, subequal, included, in one species 5. *Stigma* capitate.

Species 60, in warm regions, especially Amer.

M. AQUATICA (Aubl.). (*Bacopa radicata* Benth; *Herpestis radicata* B. & H.).

Glabrous swamp herb, with lanceolate, serrate *leaves.* *Root* long, thick. *Stamens* 4.

Patagon., at Puerto Deseado.

6. BRYODES Benth.

Minute, branching plants, with opposite, narrow, entire *leaves*, and very small, sessile, axillary *flowers.* *Corolla-tube* short, campanulate, lobes 4, spreading. *Stamens* 2. *Style* filiform; *stigma* capitate.

Species 2, Mauritius, and Magellan.

B. MINUTISSIMA Phil.

Stem dwarf, 11 mm. high, simple, densely crowded by leaves, ending in a flower. *Leaves* glabrous, linear, 8 by 1 mm., pale below. *Flowers* epigynous (?).

Magellan; with habit of *Nanodea muscosa;* intermediate between it and *Arjona.*

7. LIMOSELLA Linn. Mudwort.

Low glabrous, succulent, floating herbs, with filiform *stems* rooting in mud at the nodes, entire *leaves* with slender petioles, and filiform, 1-

flowered *scapes.* *Flowers* small; *calyx* 5-lobed, campanulate. *Stamens* 4. *Style* short, with capitate *stigma.* *Capsule* globose, 1-celled.

Species 6, widely distributed.

LIMOSELLA AQUATICA Linn.

Leaves expanded above into an oblong, or a linear-oblong blade.

(Fig. in Eng. & Prantl, iv, 3*b*, p. 78.)

(Eur., Amer., Austral., Kerguelen); Falklands; E. Fuegia (Dusén).

L. AQUATICA TENUIFOLIA Hoffm. (*L. tenuifolia* Nutt.)

Leaves awl-shaped or filiform, with no distinction of blade and petiole.

(N. Amer., far N. and W.); Patagon., Chubut, in marshes near Lago Fontana.

8. MIMULUS Linn. Monkey-flower.

Herbs, with opposite *leaves* and showy *flowers* on solitary, bractless, axillary *peduncles.* *Calyx* prismatic, 5-angled, the upper of its 5 teeth the largest. *Corolla* tubular, its upper lip 2-lobed, erect or reflexed; its lower lip 3-lobed, spreading. *Stamens* 4. *Stigma* 2-lobed, lobes ovate. *Seeds* many.

Species 30, chiefly American.

M. PILOSIUSCULUS H. B. & K.

Perennial, with creeping, quadrangular *stem.* *Leaves* petiolate, subrotund-ovate, obtuse, dentate, basicuneate or cordate, 3–5-nerved. *Peduncles* shorter than the leaf. *Calyx* hairy.

(Peru, etc.); Patagon., Chubut, by Golfo de San Jorge.

9. SCOPARIA (Linn.).

Glabrous or hairy, branching *trees* or *shrubs*, with opposite or verticillate, entire or toothed and dotted *leaves.* *Flowers* on axillary, often paired peduncles, without bractlets; small, white, yellow or bluish. *Calyx* 4–5-partite. *Corolla* rotate, 4-cleft, with obtuse, subequal lobes and bearded throat. *Stamens* 4, subequal. *Style* truncate or emarginate. *Ovules* numerous. *Capsule* septicidal, leaving the central *placenta* free.

Species 5–6, S. Amer. and Mexico; 1 in warm parts of both worlds.

SCOPARIA FLAVA Cham. & Schl.

Root woody. Plant otherwise herbaceous, glabrous; *stems* cespitose. Leaves, branches and flowers whorled in 4's, 3's or 2's. *Leaves* lanceolate, attenuate-petiolate, toothed. Upper leaves smaller, narrower, entire. *Peduncles* glabrous. *Calyx-lobes* acute, pellucid-margined.

(Chili; Brazil; Argentina); N. Patagon. (?)

10. VERONICA Linn.

Herbs or shrubs, with small, blue to white *flowers*, having rotate, unequally 4-lobed, rarely 5-lobed, *corolla*, and 2 epipetalous *stamens*. *Style* slender. *Capsule* compressed. *Seeds* flat.

Species about 200, in cold and temperate regions; most in the Old World.

1. V. ARVENSIS Linn.

Pubescent annual. *Stem* becoming diffused. Lowest *leaves* opposite, petioled, ovate and crenulate; the upper becoming alternate, sessile and narrower; the uppermost small and entire, with a minute, short-pediceled flower in the axil. *Flowers* blue to white.

(Eurasia; nat. in N. Amer.); Magellan (Dusén).

2. V. ELLIPTICA Forst. (*V. decussata* Ait.)

Glabrous shrub, with short-petioled, *decussate*, oval or oblong-elliptical, entire, mucronate, shining *leaves* and short, axillary, few-(4-)flowered *racemes* or *corymbs*. *Calyx-segments* 4, ovate, acute. *Corolla* rather large, white, or flesh-colored, its lobes obovate. *Capsule* broad-ovate.

(New Zeal., Auckland and Campbell Is.); Magellan and throughout Fuegia and W. Magellan; Falklands.

"The Hebe of Magellan," resembling a myrtle (now a favorite in cultivation; luxuriant at Mucrus in Killarney).

3. V. PEREGRINA Linn.

Ascending, branching, annual herbs, glandular or glabrous. Lowest *leaves* petiolate, opposite, oval-oblong, toothed; upper gradually more sessile, narrower and entire. *Floral-leaves* narrow, entire, exceeding the flowers. *Peduncles* very short. *Capsule* rounded, slightly emarginate.

(In all warm countries; in Amer. from Canada, by Mexico and the Andes to Patagon.)

At Puerto Madryn and E. Fuegia (Dusén).

4. VERONICA SERPYLLIFOLIA Linn.

Pulverulent or glabrous, perennial herbs. *Leaves* opposite, petiolate, or the upper sessile, oblong to ovate, crenulate or entire. *Racemes* short, terminal, with *pedicels* longer than the calyx, shorter than the bracteoles. *Corolla* pale blue, with dark lines. *Capsule* broad-obcordate.

(Eurasia, N. and S. Amer. as far as Quito); Falklands (introduced); Magellan, at Punta Arenas (Dusén).

11. OURISIA Comm.

Decumbent or creeping herbs, with opposite *leaves* and axillary *flowers*, solitary or racemed, or subumbellate. *Calyx-lobes* oblong or narrow. *Corolla-tube* cylindraceous or campanulate; lobes subequal, obtuse or emarginate. *Stamens* 4 or also with a short staminode. *Capsule* with septiferous valves, bearing the *placentæ* in their center.

Species 19, peculiar to Antarctic Amer., with representatives in Tasmania and New Zealand.

KEY TO THE SPECIES.

A. Leaves ovate-rotundate, basi-truncate, subsessile. Floral leaves sessile, ovate. Calyx-segments exceeding the corolla-tube. Ascending, pilose. *breviflora.*

*A*2. Leaves ovate, petiolate.

- *b*. Creeping. Leaves crenate, basi-rotundate. Corolla-tube twice as long as the calyx. *chamædrifolia.*
- *b*2. Dwarfs.
  - *c*. Pedicels shorter than the leaves. Calyx-segments oval-oblong, ciliate. Moss-like plants. *muscosa.*
  - *c*2. Pedicels longer than the leaves. Calyx-segments lanceolate, very acute. Pilose. *nana.*
- *b*3. Low, decumbent, hirsute. Peduncles long, 1-flowered, few-leaved. Corolla-tube six times as long as calyx. *uniflora.*

*A*3. Basal leaves cordate-ovate. Creeping plants.

- *b*. Leaves crenate.
  - *c*. Radical leaves reddish underneath. Floral leaves opposite, toothed. Corolla-tube thrice as long as the calyx, scarlet. *coccinea.*
  - *c*2. Radical leaves long-petiolate. Floral leaves round-semi-amplexicaul. Calyx-segments sub-bilabiately connate. *magellanica.*
- *b*2. Leaves incise-toothed. Floral-leaves rounded, amplexicaul. Calyx-segments oblong. Flowers pink. *pœppigii.*

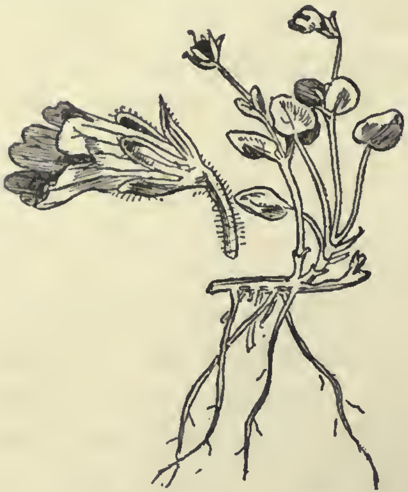
*A*4. Stems short and thick. Leaves glabrous, ciliated. Raceme profuse. Corolla-tube large, incurved, its lobes retuse. *ruelloides.*

1. OURISIA BREVIFLORA Benth.

Low, ascending, pilose. *Stem* to 7 cm. high, leafy, 2–4-flowered. *Leaves* petioled, ovate-rounded, truncate to subcordate at base. *Floral leaves* sessile, ovate. *Calyx-segments* linear-oblong, exceeding the corolla-tube. (Fig. 93.)

Magellan, to S. Fuegia. "A pretty little species; growing sparingly in the more or less rainy forest-regions." At Puerto Angosto, in W. Magellan, it grows from the sea-level to an elevation of 600 m. (Dusén.)

FIG. 93.



Ourisia breviflora. — Plant and magnified flower. (From *Flora antarctica.*)

2. O. CHAMÆDRIFOLIA Benth.

Stem low, creeping, leafy. *Leaves* ovate, obtuse, crenate, basally rounded or narrowed, petiolate. *Pedicels* axillary. *Corolla-tube* more than twice as long as the calyx. Perennial.

(Andes of Quito and Chili); Fuegia.

3. O. COCCINEA Pers.

Villous. Stem short, creeping. Radical *leaves* cordate-ovate, crenate, violet-red underneath. *Floral leaves* opposite, cuneate, incised-toothed. *Raceme* long, flowers scattered. *Corolla* scarlet, its tube thrice as long as the calyx, which has lanceolate segments.

(Chili); Patagon., Chubut in preandine woods; Chiloe I.

4. O. MAGELLANICA Juss. (See *O. ruelloides.*)

Creeping. Leaves with long petioles, cordate-ovate or rounded obtuse, crenate; the *floral leaves* round-semi-amplexicaul, the peduncles apart. *Calyx-segments* ovate, obtuse, ciliate, sub-bilabiately connate.

Magellan, Fuegia; Staaten I. Scarce; "must be one of the handsomest of Fuegian plants." (J. D. Hooker.)

5. O. MUSCOSA Benth.

Low, perennial herb, small, glabrous or pilosulous. *Leaves* petiolate, ovate, subentire, narrowed basewards. *Pedicels* not as long as the leaf. *Calyx-segments* oval-oblong, ciliate.

(Chili, Pichincha Mt.); Fuegia, on dripping mountain rocks.

6. OURISIA NANA Benth.

Low herbs, 12 mm. high. *Stems* leafy, 1–4-flowered. *Leaves* crowded, on petioles 2 mm. long, laminæ shorter, ovate, entire, concave, pilose above, glabrous below and on floral leaves. *Pedicels* exceeding the leaf. *Calyx-segments* lanceolate, very acute; shorter than the corolla-tube.

(Equador); Patagon. (?).

7. O. POEPPIGII Benth.

Creeping. Basal *leaves* with long petioles, cordate-ovate, acute, incise-toothed, smaller and more acute than in *O. magellanica.* *Floral leaves* rounded, semi-amplexicaul. *Calyx-segments* oblong, ciliate. *Flowers* pink.

S. Chili, in Cordilleras; Patagon. (?).

8. O. RUELLOIDES (Linn. f. sub *Chelone*) Gaert.

Stems short, thickish, as the petals, leaf-nerves and margin of calyx, ciliated with spreading hairs; otherwise glabrous. *Raceme* flowering almost from foot of scape.

Corolla 15 mm. long, with ample incurved tube and retuse segments. (Perhaps the same as *O. magellanica* Juss.)

S. Patagon., in upper valley of Rio Gallegos, by Nordenskj.

9. O. UNIFLORA Phil.

Low, hirsute, with decumbent stem. *Leaves* long-petiolate, ovate, sparsely crenate. *Peduncle* long, erect, 1-flowered, few-leaved. *Leaves* minute, ovate-oblong, basally attenuate, sessile. *Flowers* erect; *calyx* 5-partite; its segments oblong, ciliate. *Corolla-tube* 6 times as long as the calyx; its segments obcordate, as long as the tube.

N. Patagon., by Lago Nahuel-huapi; Staaten I.

12. DIGITALIS Linn. Foxglove.

Tall herbs, with alternate *leaves*, and showy, purple or yellow, or white flowers, in long, terminal, commonly 1-sided, racemes. *Corolla* slightly zygomorphic, the tube contracted above the ovary; mid-lip of the lower lobe the longest; lobes not spreading. *Stamens* didynamous.

Species 20, Eurasia.

DIGITALIS PURPUREA Linn.

Pubescent, stout biennial. Lower *leaves* slender-petioled, 20 cm. long, ovate or ovate-lanceolate, slightly attenuate, acute, toothed. *Flowers* drooping. *Corolla* spotted inside.

(Central and Western Europe); Patagon. (introduced). Its leaves are officinal. (Fig. A–H in Eng. & Prantl, iv, 3*b*, p. 89.)

13. GERARDIA Linn.

Erect, branching herbs or shrubs, chiefly with opposite, sessile *leaves*, and showy purple or violet or whitish *flowers*. *Corolla* with wide tube, slightly 2-lipped, the lower lobe exterior in the bud, the lobes spreading. *Stamens* didynamous, included, their filaments hairy.

Species 40, America.

(Fig. in Eng. & Prantl, iv, 3*b*, p. 93.)

1. G. LANCEOLATA (R. & P.) Benth.

Leaves lanceolate, mostly subrevolute-margined. *Calyx-teeth* large, spreading, at length reflexed.

(Bolivia, etc.)

G. LANCEOLATA FILIDENS O. Ktze.

Calyx-teeth linear, subfiliform, less than 1 mm. broad, 6 mm. long.

N. Patagon., by Rio Negro.

2. G. RIGIDA Gill.

Scabrous. *Leaves* linear or lanceolate, acute, floral leaves shorter than the flower. *Raceme* crowded; the pedicels not exceeding the *calyx*, which is glabrous, having long, filiform lobes. *Corolla* pubescent, its tube much exceeding the calyx, above ventricose-campanulate, pink. *Anthers* short, mucronate.

Extratrop. S. Amer.

G. RIGIDA GRANDIFLORA.

Leaves of specimens from Rio Negro 6 cm. by 1.5 cm. *Flowers* large, red-violaceous; *calyx-teeth* in the variety short. *Fruit* small, 10 by 8 mm., enclosed in the calyx. Seeds minute, scarcely 1 mm. in diameter.

N. Patagon.

14. EUPHRASIA Linn. Eyebright.

Low, mostly branched herbs, of *subparasitic* habit, with opposite toothed or incised *leaves*, and small, blue to yellow or white *flowers*, in terminal, leafy-bracted spikes. *Calyx* not bracteolate at base, 4-lobed, or with a small fifth lobe. *Corolla* very bilabiate, upper lip erect, lower spreading. *Stamens* didynamous, pollen-sacs equal and parallel. *Capsule* nearly oblong. *Seeds* many, ribbed.

(Fig. A–H in Eng. & Prantl, iv, 3*b*, p. 100.)

Species 100, in temperate and cold regions, N. and S. Hemispheres.

1. E. ANTARCTICA Benth.

Minute, erect, simple, pubescent. *Leaves* cuneate-trifid, the lobes obtuse, short. *Corolla-tube* exserted; its lobes short, subentire. *Capsule* ovate, obtuse.

(Chili); S. Patagon., by Hatcher on pampas by Rio Coy, Dec. 17.

Magellan; by R. O. Cunningham on Mt. Dinero, Patagon.

Also in Australia, and in S. I. of New Zeal. "Allied to the European *E. officinalis*, and still more nearly to the Himalayan." (J. D. Hooker.)

2. E. CÆSPITOSA Phil.

Perennial, forming a deep turf; *stems* 5 cm. high, simple, puberulous. *Leaves* glabrous, fleshy, trifid, with linear segments. *Spike* short, few-flowered. *Calyx-segments* ovate. *Corolla-tube* slightly exceeding the calyx, funnelform, dilated; its lips short.

S. Chili, at Rio Palena.

3. E. PERPUSILLA Phil.

Glabrous. Stem branching, scarcely 25 mm. high. *Leaves* crowded, the lower obovate-spatulate, entire; the upper 3-lobed. *Calyx-segments* linear, 4 mm. long, apically rounded. *Corolla* twice as long as the calyx.

Chonos Archip. It differs from *E. antarctica* by being glabrous, with entire lower leaves; from other species by its smallness, etc.

Family 101. BIGNONIACEÆ. Trumpet-creeper Family.

Usually trees or shrubs, erect or climbing, with exstipulate, mostly opposite, simple or pinnate *leaves;* and large, showy, sympetalous, inferior *flowers*, slightly zygomorphic. Fertile *stamens* 2 or 4 on the corolla-tube. *Ovary* superior, mostly 2–1-celled with a transverse septum and simple 2-lobed style; and many flat or winged *seeds* without endosperm, in the long *capsule*.

Species 500, chiefly tropical.

1. TECOMA Juss. (1789). (*Campsis* Lour., 1790.)

Shrubs climbing, with aerial rootlets, or erect, with opposite, odd-pinnate *leaves* (rarely simple), and red or orange *flowers* in terminal inflorescences. *Calyx* unequally 5-toothed. *Corolla-tube* narrow-campanulate, its lobes spreading. *Stamens* didynamous; the pollen-sacs diverging. *Capsule* long; *seeds* transversely winged.

(Fig. sub *Campsis*, in Eng. & Prantl, iv, 3*b*, p. 231, A.)

Species 80, in warm and temperate countries.

T. VALDIVIÆ Phil.

Elegant climbing shrub, often over 3 m. long, with leaves having 5 pairs of leaflets coriaceous, oblong, entire, or appressed-serrate apexwards, 30 by 11 cm.; the terminal leaflet often long. *Racemes* 7–10-flowered. *Calyx* turbinate, its teeth short, triangular. *Corolla* tubular, red-saffron, over thrice as long as the calyx, with short-rounded, slightly spreading lobes, pubescent inside. Larger *stamens* and the *style* as long as the corolla.

(Chili); W. Patagon. "Adorning the shady woods."

Family 102. GESNERIACEÆ.

Herbs or shrubs, with opposite, simple *leaves* and showy flowers on axillary peduncles. *Flowers* sympetalous, zygomorphic, with inferior or superior bicarpellary 1-celled *ovary*, having 2 parietal or intruding *placentæ*, and 4 or 2 *stamens*, with 1 or three staminodes; *anthers* mostly conniving or cohering. *Style* 1. *Ovules* numerous, minute, with straight, rather long embryo, mostly endospermous.

Species 700, in warm climates; not north of Mex. in the New World.

1. ASTERANTHERA Hansk.

Slender *climbers*, with small, crenate *leaves*, and large *flowers* solitary on short, axillary pedicels. *Corolla* scarlet, bilabiate, upper lip erect, consisting of 2 united lobes, other lobes spreading; *stamens* 4, inserted at its base, *anthers* cohering into a cross.

Only 2 species, viz:

1. ASTERANTHERA CHILOENSIS Hansk.

The *upper lip* of the corolla consisting of 2 dorsal lobes, united even to the apex; the lateral lobes not adnate to it. *Tube* subgibbous at the base, narrow. *Stamens* distinct at the base, with a rudiment of a fifth. Leaves?

W. Patagon. (Dusén).

2. A. OVATA Hansk. (Cav. sub *Columnea.*)

Stem fruticose, subscandent, rooting. *Leaves* petiolate, lower surface rusty-tomentose. *Pedicels* shorter than the flowers. *Anthers* elegant, in form of a cross.

Chiloe I.; Patagon, by Lake Otway.

2. MITRARIA Cavan.

Climbing or low shrubs, with opposite *leaves*, ventricose *corolla*, contracted at the throat, and with short lobes; 4 perfect, exserted *stamens*, not cohering; and superior *ovary*. *Bracts* subconnate at one side, enclosing the calyx.

Species 1, viz:

M. COCCINEA Cav.

Habit of *Fuchsia*. *Leaves* with few serrations. *Flowers* solitary, long-pediceled, axillary.

(Fig. in Eng. & Prantl, iv, 3*b*, p. 162.)

Chonos Archip.; Patagon., by Lake Otway.

3. SARMIENTA Ruiz & Pav.

Creeping or climbing, glabrous shrub, with small, fleshy, opposite *leaves*, and white, pediceled *flowers*, solitary in the axils. *Calyx* free, 5-partite, its segments narrow. *Corolla-tube* long, ventricose, contracted above, its limb with 5 rounded, spreading lobes, slightly oblique. *Stamens* inserted near the base of its tube, 2 posterior perfect, with a short staminode between them, and 2 anterior, rather long staminodes. *Ovary* superior, with a long style. *Capsule* circumscissile.

Species 1, viz:

SARMIENTA REPENS Ruiz & Pav.

Leaves broad, ovate-elliptical, subentire. *Pedicels* longer than the leaves, 2-bracteolate above. *Stamens* and *style* twice as long as the corolla.

Family 103. MARTYNIACEÆ. Unicorn-plant Family.

Viscidly secreting herbs, with chiefly opposite *leaves* and terminal *racemes* of zygomorphic sympetalous *flowers,* having 4 didynamous *stamens* and a staminode (rarely 2 stamens and 3 staminodes). *Ovary* superior, 1-celled, with 2 parietal *placentæ*, or falsely 2–4-celled. *Capsule* horned, with soft, deciduous pericarp. *Seeds* pendulous, with thick, rugose testa, no endosperm.

Species 9, S. Amer. and Mex.

PROBOSCIDIA Schmid.

Prostrate herbs, with *corolla* enlarging from the base, narrow-campanulate. *Stamens* 4. *Capsule* dehiscing above the base of the horn, and dividing below into halves. *Seeds* many, with plain coat.

Species 6, Texas to S. Amer. (Fig. in Eng. & Prantl, iv, 3*b*, p. 266, H–K.)

P. LUTEA (Lindl. sub *Martynia*) Stapf.

Leaves cordate-orbiculate, subdentate, glandular-pubescent (as is the stem). *Horn* much longer than the pericarp. *Flower* large, yellow.

(Brazil; Paraguay); N. Patagon.

Family 104. LENTIBULARIACEÆ. Bladderwort Family.

Aquatics or bog-herbs, with *leaves* basal and tufted, or floating, or reduced to scales; and perfect, zygomorphic, sympetalous *flowers*, solitary or racemose on erect scapes. *Calyx* 2–5-partite. *Corolla* bilabiate, the upper lip usually erect, the lower large and spreading, with palate and spur. *Stamens* 2, anther-sacs confluent. *Ovary* superior, 1-celled. *Style* short, stigma 2-lobed. *Seeds* numerous, without endosperm.

Species 160, in warm and temperate climates.

PINGUICULA Linn.

Acaulescent, terrestrial herbs, with basal, entire *leaves* and naked, 1-

flowered *scapes*. The *leaves* capture insects, being sensitive, and exuding a viscid secretion.

Species 50. (Fig. 55 in Eng. & Prantl, iv, 3*b*, p. 119.)

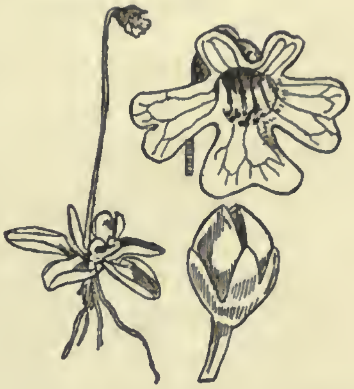
PINGUICULA ANTARCTICA Vahl.

Leaves 3–5, 12 mm. long, oblong, very obtuse, often emarginate, glabrous, as is the scape. *Corolla* small, its lobes emarginate, white, with violet lines, the spur conical, obtuse, straight, shorter than the petals. (Fig. 94.)

Magellan; Fuegia to Cape Horn; Staaten I.

"A very pretty little plant." "The peduncle is not absolutely glabrous, but has stalked glands." (Franchet.)

FIG. 94.



Pinguicula antarctica.—Plant, nearly natural size; also magnified flower and fruit. (From *Flora antarctica.*)

Family 105. PLANTAGINACEÆ. Plantain Family.

Annual or perennial herbs, mostly with basal *leaves* and small, 4-merous *flowers*, with dry perianth, bracteolate in dense spikes, or capitate or solitary on scapes. *Stamens* 4, 2 or 1, epipetalous, anthers versatile. *Ovary* superior, 1–4-celled. *Style* 1, filiform. *Capsule* mostly circumscissile; seeds 1–several in each cell, with endosperm.

Species 200, cosmopolitan.

1. PLANTAGO Linn.

Flowers hermaphrodite or rarely unisexual. *Corolla-tube* cylindrical, or constricted at the throat, with spreading or reflexed limb. *Capsule* circumscissile, mostly 2-celled; with *seeds* peltately fixed to the septum.

Species numerous, in Eurasia, and the Mediterr. region and Canaries; some in Orient and S. Africa, Austral., Tasmania and New Zeal. Many in N. Amer.

Section *Plantaginella* includes a group of species having few-flowered (1–4-flowered) spikes or heads, and 3–6-seeded capsules; being mostly low or cespitose plants characteristic of the Andes and Australasia.

KEY TO THE SPECIES.

A. Spikes few-(about 1–4-) flowered. (PLANTAGINELLA.)
  b. Leaves subulate, in tufts on the branches, silvery. Spikes 2–5-flowered, subsessile, concealed amid the leaves. *bismarckii.*

*b*2. Leaves narrow-linear. Spikes 1–4-flowered.

c. Peduncles many times shorter than the leaves. Fruit 2-celled, 4-seeded. *monanthos.*

*c*2. Peduncles longer than the leaves, silky. Corolla-lobes ovate-lanceolate, suberect. Seeds rugose. Dwarf woolly. *pseudo-patagonica.*

*c*3. Peduncles as long as the leaves, becoming longer. Leaves silky. Spike 2–4-flowered. Flowers 2-seeded. *rancaguæ.*

*c*4. Peduncle surpassing the leaves, 1-flowered. Leaves linear-squarrose, spiny-mucronate, with appressed hairs. Tap-root hollow. *cœlorhiza.*

*b*3. Leaves linear, rigid, white-mucronate, glabrous, sessile; with periclad silky inside. Corolla-lobes reflexed. *oxyphylla.*

*b*4. Leaves narrowly linear-lanceolate or linear, subacute, fleshy, remotely toothed. Peduncles as long. Fruit 6-seeded. Petals subacuminate. *barbata.*

*b*5. Nearly as *b*4, but petals obtuse, seeds 4–8 (not American). *brownii.*

*b*6. Leaves oblanceolate, entire, glabrous, 1-nerved, exceeding the 4-flowered scapes. Seeds 4. *tehuelcha.*

*A*2. Spikes more or less cylindrical, many-flowered.

b. Leaves linear. Peduncles exceeding the leaves. Smooth herbs.

c. Leaves 3-nerved, attenuate both ways. Peduncles silky and hairy. Spikes oblong. Corolla-lobes rounded. *coriacea.*

*c*2. Leaves fleshy, obscurely nerved. Dense, blunt spikes. Corolla-lobes spreading. *maritima.*

*b*2. Leaves lance-linear, entire.

c. Puberulous. Peduncles as long as the leaves, lax-pilose. Corolla-lobes ovate-cordate, acute. Seeds 3. *myosurus.*

*c*2. Woolly. Peduncle hirsute. *patagonica.*

*b*3. Leaves linear to linear-lanceolate or pinnatifid. Flowers small. Fruit 4-celled and 4-seeded. Hairy. *coronopus.*

*b*4. Leaves long-lanceolate, acute, attenuate-petiolate, 5–7-nerved, glabrous. Peduncles as long as leaves, hairy above. Spikes long-cylindrical. Fruit 3-seeded. *candollei.*

*b*5. Leaves lanceolate, attenuate-petiolate, slightly hairy, 3–5-ribbed. Peduncle angular, longer than the leaves. Spike ovoid. Seeds 2. *lanceolata.*

*b*6. Leaves ovate to lanceolate, 5-nerved, toothed. Peduncle longer, violet upwards. Spike long-cylindrical, lax. Seeds 4, yellow. *hirtella.*

*b*7. Leaves ovate-lanceolate, 3–5-nerved, subentire. Scape longer. Seeds 2–4. *virginica.*

*b*8. Leaves broad-ovate, obtuse, crenate or toothed; nerves 5–7; attenuate-petiolate. Scapes striate upwards. Corolla-lobes long, acute. Fruit 2-celled, many-seeded. *rocæ.*

1. Plantago barbata Forst. (1789; *P. pauciflora* Lam. non Hook.) (Plate XXV, fig. A.)

Plantaginella. Lax-cespitose, simple or branching. *Leaves* erect, stellately spreading or recurved, narrowly linear-lanceolate or linear-elongate, subacute, fleshy, remotely toothed, base scarious, bearded or glabrate; *scapes* equalling the leaves, *spikes* 1–3-flowered. *Corolla-lobes* subacuminate. *Capsules* broad-ovate, 6-seeded, their lower part scarcely exceeding the calyx.

Magellan; Fuegia; Falklands. Highly variable; lower part of capsule broad; of *P. monanthos* obconical, narrow, elongated. Allied to *P. brownii* Raf. of Tasmania and New Zeal.; and to *P. andicola* Gill., which has curious roots.

S. Patagon., by O. R. Peterson, determined in Royal Gardens, Kew.

PLANTAGO BARBATA ELONGATA.

Stem simple; *leaves* erect, narrowly and long-linear-spatulate, obtuse, remotely sinuate-dentate, bearded.

Magellan, at Port Gregory.

P. BARBATA IMBERBIS Hook. f.

Stem branching. *Leaves* spreading, lance-obtuse, remotely toothed, bearded at base.

Magellan, by Port Famine; Churucca; Fuegia.

2. P. BISMARCKII Nied.

Plantaginella. A small bush, 30–60 cm. high, the *stem* only 25 mm. in diameter. *Leaves* in many crowded tufts on the branches, subulate, silvery-hairy. *Spikes* 2–5-flowered, short-stalked, concealed among the terminal leaves of the branches.

(Argentina); N. Patagon., on Sierra de la Ventana.

(Fig. in Eng. & Prantl, iv, 3*b*, p. 364, A.)

[3. P. BROWNII Raf. (*P. carnosa* Br.)]

Plantaginella. Stemless; collum very thick. *Leaves* many, stellately spreading, thick and fleshy, spatulate or lanceolate, obtuse, incised-dentate or runcinate, glabrous or rarely pilose, naked at base. *Scapes* numerous, as long as the leaves. *Flower-heads* compressed, 1–4-flowered. *Bracts* and *calyx-leaves* acute. *Capsule* enclosed by the calyx, rounded, circumscissile below the middle. Seeds 4–8. (Fig. in Eng. & Prantl, iv, 3*b*, p. 364, F.)

Auckland Is., on rocks near the sea; New Zeal.; Tasmania. "It belongs to a small group of the genus, remarkable for having the flowers solitary or capitate, not spicate, and never more than 5 in number; allied to a number all found in S. America; whose only representative in the Old World is this plant." (J. D. Hooker. Not known in America.)

4. PLANTAGO CANDOLLEI Raf.

Annual. *Leaves* long-lanceolate, entire or callous-toothed, acute, attenuate to a long petiole, 5–7-nerved, glabrous, the peduncles erect, as long as the leaves, laxly pilose above. *Spikes* long, cylindrical, loose-flowered below, the bracts carinate, lanceolate, acutish. Anterior *calyx-leaves* united at the base, ovate, membranous-margined; posterior broader, carinate, denticulate, ciliolate. *Corolla-lobes* ovate-cordate. *Capsule* 3-seeded.

(Chili); Patagon., near mouth of Rio Chubut. (Dusén.)

5. P. (PLANTAGINELLA) CŒLORHIZA Morris & Macloskie, n. s.

(Plate XXV, Fig. C).

Dwarf, cinereous undershrub, with hollow, conical caudex, crowned by *many-seriate, squarrose, rosulate*, rigid, linear, sessile, entire *leaves, these mucronate, with siliceous spines, both sides with appressed bristles*, and the bases hidden by long, silky hairs. *Peduncles* several, exceeding the leaves, *bristly, with 1-flowered spikes. Bracts 2*, triangular-ovate, shorter than the broad-ovate sepals, and, like them, scarious, with herbaceous midribs. *Pyxis* circumscissile, exceeding the calyx, *long-beaked by the persisting stylobase.* Seeds probably 2.[1]

S. Patagon., by Rio Coy.

The type-specimen is no. 37 of the J. B. Hatcher collection in Princeton University; well characterized by its stiff, squarrose leaves, with long

[1] PLANTAGO (§ PLANTAGINELLA) CŒLORHIZA Macloskie & Morris, sp. nov.

Planta perennis pumila cinerea caudice cavo frutescente, dense et squarrose *rosulato-foliifero*, unde plures *pedunculi uniflori*, in *radicem cavum* conicum deorsum transeuntes. *Folia* plurima, squarrosa, crassiuscula, rigida, linearia, sessilia, *basi* scarioso lato, longa *lana* sericea occulto, integerrima, 6–8 mm. longa, 1.5 mm. lata, utrinque *setis* rigidis brevibus adpressis obsita, *apice* acuto, *mucrone* spiniformi siliceo munito. *Pedunculi* e superioribus axillis sursum adscendentes, plures, rigidi, breviter folia superantes, 7–25 mm. alti, cinerei setis adpressis, *spica* uniflora. *Bracteæ* binæ, subæquæ et oppositæ ad summum pedunculum insertæ, scariosæ, *costa* angusta herbacea dimidium sepalorum paullo superantes, triangulo-ovatæ, acutæ, plus-minus 1.5 mm longæ. *Flos* unicus inter bracteas binas sessilis, *sepalis* scariosis, costa herbacea excepta, late-ovatis, acutis, plus-minus 2 mm. longis. *Pyxis* tertia parte calycem superans, late-ovoideus, apice longo stylobasi persistente rostrato, circumscissilis ad tertiam partem inferam, 2.5 mm. vel 2 mm. *Semina* pauca, forsitan sæpius bina.

siliceous spines, and covered with white, appressed bristles, and by its 1-flowered, 2-bracted spikes, its long-beaked pyxis and its hollow caudex.

6. PLANTAGO CORIACEA Cham. & Schl. (*C. brasiliensis* Sims.)

Subcaulescent perennial, with glabrate, obscurely 3-nerved linear, or narrower *leaves*, attenuate both ways, their points callous. *Scapes* twice as long as the leaves, terete, sericeous, interspersed below with spreading hairs. *Spikes* oblong-cylindrical; lower bracts ovate, acuminate, laxly pubescent; upper obtuse. *Calyx-leaves* rounded concave, slightly glabrous. *Corolla-lobes* rounded, with scarcely a mid-line. Ovary 2-celled, *cells* 1-ovuled.

(Brazil); Patagon., Chubut, valleys by Cabo Raso.

7. P. CORONOPUS Linn.

Rootstock short. *Leaves* spreading, linear or linear-lanceolate to pinnatifid, with linear segments, hairy, the ribs not prominent. *Spikes* cylindrical. *Flowers* small. *Sepals* broad, ciliate. Ovary 4-celled; cells 1-seeded.

(Mediterr. region; Central Eur.; North Asia; Austral.); Patagon. (?).

8. P. HIRTELLA Kunth.

Leaves ovate or ovate-oblong or lanceolate, 5-nerved, dentate, the teeth transverse or reflexed, or subsessile, with a basal tubercle, or attenuate to a short, scarious-margined petiole, glabrate, with loose hairs. *Peduncles* ascending, exceeding the leaves, sometimes puberulous above, violet-colored. *Spikes* long-cylindrical; lower flowers lax. *Bracts* lanceolate, membranaceous-margined. Anterior *calyx-leaves* equilateral-oval, glabrous; posterior broader. *Corolla-lobes* ovate-cordate, acute, glabrous. *Capsule* with 4 yellow seeds.

(Chili); N. Patagon.

9. P. LANCEOLATA Linn.

Leaves lanceolate, about 7 cm. long, attenuate-petiolate, slightly hairy, basal, erect or spreading, 3–5-ribbed. *Scape* exceeding the leaves, erect and angular. Spike ovoid, about 2 cm. long, or less. *Sepals* scarious, green-ribbed. *Stamens* twice as long as the corolla. *Capsule* 2-celled; seed 1 in each cell; filaments white, slender.

(Eurasia; naturalized in N. Amer.; also in Brazil); Magellan, by Dusén, in the streets of Punta Arenas; doubtless introduced.

10. PLANTAGO MARITIMA Linn. (*P. marginata* Steud.; *P. juncoides* Lam.)

Leaves glabrous, fleshy, linear, obscurely nerved, 5–25 cm. long. *Scapes* exceeding the leaves, with dense, blunt spikes of perfect flowers. *Seeds* 2–4, twice as long as the calyx.

(Eurasia, on the sea-shore; and on coasts of temperate N. Amer.; also in S. Africa. Not in Australasia.) Patagon; Golfo de San Jorge; Rivers Gallegos and Sta. Cruz; Magellan; Fuegia, at Ushuaia; Nassau I., forming "turf."

P. MARITIMA MACROPHYLLA Speg.

Leaves linear, fleshy, acute, 20–30 cm. long.

S. Patagon., Salinas by Rio de Sta. Cruz.

P. MARITIMA PAUCIFLORA Speg.

Small. *Leaves* linear, short (10–15 mm.), thick, rather rigid, apically callous. *Spikes* 3–5-flowered. *Scapes* appressed-setulose, about twice as long as the leaves.

N. Patagon., by Rio Sta. Cruz.

11. P. MONANTHOS d'Urv. (Plate XXV, Fig. B.)

Plantaginella. Stems branching, densely cespitose. *Leaves* crowded, sheathing at the base, erect, subsquarrose or spreading, narrowly linear-elongate, obtuse, obscurely toothed, with cartilaginous margins. *Peduncles* many times shorter, glabrous at the base. *Spikes* 1–4-flowered. *Capsule* narrowly clavate, circumscissile below the middle, 2-celled. *Cells* 2-seeded.

S. Fuegia to Cape Horn; Falklands; S. Patagon. (Hatcher).

12. P. MYOSURUS Lam.

Leaves linear-lanceolate, obtuse, entire, 3-nerved, attenuate to a narrow petiole, puberulous on both sides. *Peduncles* erect, as long as the leaves, laxly pilose, with spreading hairs. *Spikes* cylindrical, densely flowered; bracts hirtellate. *Calyx-leaves* narrow, oblong-elliptical, inequilateral, obscurely toothed-ciliolate. *Corolla-lobes* ovate-cordate, acute, glabrous. *Ovary* 3-ovulate, fruit usually 3-seeded.

(Montevideo; S. Brazil; Argent.); Patagon.

13. PLANTAGO OXYPHYLLA Speg.

Plantaginella. Suffruticose, 10–20 cm. high, perennial, cespitose. *Leaves* rigid, linear, long-attenuate, cuspidate, white-mucronate, glabrous, sessile, with a membranous pericladium, long-silky-villous on its inside. *Bracts* like leaves, 1-flowered, 2-bracteolate upwards. *Corolla* short, glabrous, its lobes narrow, reflexed.

S. Patagon., at Salinas by Rio Sta. Cruz. (Specimens referred to this by Dusén have appressed hairs on the epiphyl.)

14. P. PATAGONICA Jacq.

Leaves lanceolate-linear, somewhat channeled, entire, woolly. *Scape* rounded, hirsute. *Spike* cylindrical. *Stamens* not protruding.

(Western N. Amer., and southwards); at Rawson by mouth of Rio Chubut, very common; Golfo de San Jorge.

P. PATAGONICA var.

Abundantly white cottony, not rufous, calyx.

N. Patagon., by Rio Negro.

15. P. PSEUDO-PATAGONICA Vatke. (*P. patagonica* Phil. non Jacq.)

Plantaginella. *Dwarf* annual. *Leaves* narrow-linear, with a callous tip, hoary-woolly on both sides. *Peduncles* ascending, at length suberect, appressed-silky, exceeding the leaves. *Spikes* few, 1–4-flowered, *flowers* subopposite, *bracts* deltoid, acute, medially hirt; not half as long as the calyx. *Sepals* obtuse, hirt. *Corolla-lobes* ovate-lanceolate, short, rather erect, obtuse. *Seeds* rugose.

(Chili); Patagon. (?).

16. P. RANCAGUÆ Steud. (*P. patagonica* Bert. non Jacq.)

Plantaginella. Roots slender, sending up scapes. *Leaves* narrow-linear, silky, as long as the scapes, at length shorter. *Scapes* terete, pilose. *Spike* subcapitate, 2–4-flowered. *Bracts* shorter than the calyx. *Corolla-segments* one-third as long as the calyx. *Seeds* 2, narrow-oblong.

(Chili); Patagon. (?).

17. P. ROCÆ Lorentz.

Leaves broad-ovate, about 16 cm. by 11 cm., obtuse, crenate or toothed, scarcely rugulose, green, with 5–7 principal nerves; attenuate-petiolate.

Scapes long, terete below, striate. *Spike* 45 mm. long, cylindrical, elongating in fruit. *Bracts* equalling or exceeding the calyx, ovate, concave, longer below. *Corolla* exceeding the calyx, its lobes long, acute. *Capsule* ellipsoid, 2-celled; the cells with 8–12 trigonal seeds in each.

N. Patagon.

18. PLANTAGO TEHUELCHA Speg.

Plantaginella; 4-seeded. Cespitose perennial, with the stems immersed in mud, and branches simple, rosulately leafy. *Leaves* oblanceolate, obtusely acutish, entire, thickish, obscurely 1-nerved, glabrous. *Scapes* hispidulous, not longer than the leaves, 4-flowered at their apex. *Bracts* and *sepals* broad-ovate, glabrous, scariously margined. *Corolla-lobes* lanceolate, reflexed, the teeth glabrous.

S. Patagon., by Rio Sta. Cruz.

19. P. VIRGINICA Linn.

Leaves ovate-lanceolate or oblong, entire or repand-toothed, 3–5-nerved, pubescent, attenuate-petiolate or subsessile. *Scapes* slender, erect, exceeding the leaves. *Spikes* linear-cylindric, 3–10 cm. long, or in dwarf forms reduced to a few flowers. Partly diœcious. *Corollas* of fertile flowers connivent over the fruit as if beaked. *Stamens* 4. *Seeds* 2–4.

(United States); Patagon., at Rawson by mouth of Rio Chubut. (Dusén.)

2. LITORELLA Linn.

Monœcious. Staminal flowers solitary on scapes or on their two branches. Pistillate flowers crowded and concealed amid the radical leaves. Nutlet indehiscent, 1-seeded. Embryo straight.

Species 2, one aquatic in Europe, and the following:

L. AUSTRALIS Griseb.

Pistillate flowers in an oval, sessile spike. Staminal flowers unknown.

S. Chili, by Grisebach; not recently seen. Probably the same was got (not in flowers) by J. D. Hooker in Falkland Is.

Family 106. RUBIACEÆ. Madder Family.

Herbs or woody plants, with opposite-stipulate or whorled *leaves*, and regular, perfect flowers, with *calyx* adnate to the 1–10-celled *ovary*, sympetalous *corolla*, and epipetalous *stamens*, equinumerous with its lobes; and *fruit* a berry, or capsule, or drupe.

Species more than 5,000, cosmopolitan; most are tropical.

KEY TO THE GENERA.

All have valvate corolla.

A. Fruit segments few-seeded. Flowers small, 4–5-merous. Capsule dry, loculicidal, its lobes bifid. Stipules broad, connate with the petioles. Alpine dwarf-plants. 1. *Cruckshanksia*, p. 739.

AA. Fruit-segments 1-seeded. Seeds ascending.

b. Seed basal; ovary 2-celled, rarely more-celled. Septum thick. Fruit a juicy drupe. Stamens in base of corolla-tube, mostly diœcious herbs. 2. *Nertera*, p. 740.

bb. Flowers usually 4-merous and stem 4-angled. Seeds on the septum. Flowers usually 4-merous, and stem 4-angled. Calyx-teeth small or none. Corolla rotate. Fruit dry, didymous. Stipules leaf-like. 3. *Galium*, p. 740.

1. CRUCKSHANKSIA Hook. & Arn.

Alpine undershrubs or herbs, with small, leathery, spatulate, opposite *leaves*, and interpetiolar, triangular *stipules* adnate to their petioles. *Flowers* yellow, in terminal, cymose *umbels*. Calyx 4–5-merous, 1–2 or 3 lobes enlarged in a single, colored, coriaceous lobe. Corolla salverform, with a long tube, its lobes valvate. Stamens on the throat, only slightly exserted. Ovary 2-celled; each cell with 2–3 amphitropous ovules. Stigma 2-cleft. Capsule thin.

Species 5, Chili.

1. C. GLACIALIS Poepp. & Endl. (*Oreopolus citrinus* Schl.)

Densely cespitose undershrub, only 5 cm. high, glabrous, branches leafy at top. *Leaves* opposite, petiolate, coriaceous, elliptic-ovate to spatulate, 1 cm. long, including one third of this as petiole. Subconnate *stipules* persisting after fall of leaf. *Flowers* subternate. *Calyx* hid among upper leaves; its tube obconical; its limb unequally 4–5-lobed. *Corolla* yellow, pubescent, with 5 short, linear-lanceolate lobes, its tube 10 mm. *Stamens* 5, anthers dorsifixed, with lateral slits near their top. *Capsule* subglobose.

(Chilian Andes, in cold regions); Patagon., Chubut; pampas of S. Patagon., near Coy Inlet, by O. A. Peterson, Nov. 25, 1896. Whole plant blackish when dry. W. Patagon., by Lago Nahuel-huapi (Dusén).

2. CRUCKSHANKSIA PATAGONICA (Speg. sub *Oreopolus*).

Pulverulent cespitose, 5–10 cm. high (green when dry), with apically rosulate *branches*. *Leaves* opposite, fleshy, subcoriaceous, elliptical, ovate, entire, glabrous, attenuate-petiolate. *Stipules* connate. *Flowers* sessile in the leafy rosules, mostly solitary. *Sepals* small, dentiform. *Corolla* long, salver-shaped; its lobes lanceolate, spreading, villous inside.

Patagon., by Golfo de San Jorge; by Rio Chico, and in Central Chubut.

2. NERTERA Banks & Sol.

Small, slender, *creeping* herbs, glabrous or sparingly pilose; with small, broad, opposite *leaves*, and connate *stipules;* and inconspicuous sessile, axillary, 4-merous *flowers*, which are sometimes abortively *unisexual. Stamens* exserted. *Style-branches* 2, long, hirsute. *Fruit* a reddish yellow drupe with 2 pyrenes and 2 seeds. (Fig. of flower in Eng. & Prantl, iv, 4, p. 131, A, B.)

Species 6, 4 in New Zeal., 1 in Australia and the following:

N. DEPRESSA Banks & Sol.

Leaves petiolate, cordate-ovate, lobed, 8 mm. long and broad. *Drupes* bright yellow, globular, attractive.

(Creeping among moss, of the habit of *Mitchella repens*. Often cultivated for its beauty. Very widely dispersed in southern lands, from New Zealand to the Chilian Mts., including Australia, Tristan, Hawaia.) Magellan; Fuegia; Falklands. N. Patagon., by Lago Nahuel-huapi, on dripping rocks.

3. GALIUM Linn. Bedstraw, Cleavers.

Herbs, with 4-angled stems and branches and whorled leaves. *Flowers* (rarely diœcious), small, 4-merous, rarely 3-merous. *Ovary* 2-celled, cells 1-seeded. *Styles* 2. *Fruit* and foliage often with hooked bristles.

Species 225, widely distributed.

KEY TO THE SPECIES.

- *A.* Leaves in 4's.
  - *b.* Glabrous.
    - *c.* Stem tetragonal.
      - *d.* Leaves linear, mucronate. Peduncle solitary, axillary, 1-flowered, short. Fruit cream-colored, smooth. *leucocarpum.*

d2. Leaves oblong-linear, mucronate, transparent, nerves setiferous. Peduncles axillary, 1–2-flowered. Involucre 4-leaved. Fruit setulose. *chætophorum.*

d3. Leaves lanceolate, ciliate, reflexed. Peduncles axillary, 1-flowered, 4–5-leaved. Flowers purple-tipped, with setæ. Fruit smooth. *ciliatum.*

c2. Leaves becoming yellow, subulate, acute, reflexed, 1 cm. long. Flowers axillary, solitary, 4-bracted. Cocci rugulose, smooth. *patagonicum.*

c3. Leaves oblong to lanceolate, obtuse. Flowers 3-merous, solitary in axils. Fruit smooth. *antarcticum.*

c4. Leaves elliptic-oblong, acute, 3-nerved. Peduncles terminal, in 3's. Fruit rough. *fuegianum.*

b2. Sparsely scabrous. Stems tetragonal. Peduncles opposite or whorled, 4-bracted.

c. Leaves linear-oblong, acute, 1-nerved, half as long as internodes. Peduncles 3-flowered. Fruits tubercled. *richardianum.*

c2. Leaves subelliptic, mucronate. Peduncles 1-flowered. Fruit didymous. *relbun.*

A2. Leaves in 4's, rarely in 6's, sparsely scabrid, spatulate-linear, 6 mm. long. Stem filiform. Peduncles 1–3-flowered. Fruit large, smooth. *forsteri.*

A3. Leaves in 5's, linear-lanceolate, glabrous, with rough margins. Peduncles solitary and 2-flowered, or paired and 1-flowered. Fruit glabrous. *magellanicum.*

A4. Leaves in 5's or 6's, lance-oblong, awned, scabrid-nerved. Cymes 1–5-flowered. Fruit rough. *chilense.*

A5. Leaves in 6's or 8's, oblanceolate to linear, cuspidate. Cymes 1–3-flowered. Fruit didymous, with hooks. *aparine.*

A6. Leaves in 6's or 7's, oblong, obtuse, margin revolute. Flowers corymbose. Fruit smooth small. Erect plant. *nigricans*

1. GALIUM ANTARCTICUM Hook. f.

Glabrescent, with slender, sparingly-branched, decumbent *stems. Leaves* in 4's, spreading-recurved, oblong or oblong-lanceolate, or linear-lanceolate, obtuse, the margins subscaberulous and recurved. *Flowers* 3-merous, solitary in the axils. *Fruit* with thick, short peduncles, glabrous. *Plant* 10 cm. high; leaves 12 mm. long.

Fuegia; Staaten I.; Falklands (also Kerguelen I.).

S. Patagon., by Hatcher at Rio Coy, flower-buds formed Dec. 17, 1896. "A very distinct little species, somewhat resembling *G. saxatile* L., of Europe. It abounds in the Falkland Islands, especially near fresh water lagoons." (J. D. Hooker; B. Brown, by Rio Gallegos.)

2. G. APARINE Linn. (*G. pseudo-aparine* Griseb.)

Weak annual, scrambling over bushes; *angles* of stems, the *leaves* and the *fruit* with stiff retrorse hairs and hooks. *Leaves* in 6's or 8's, oblanceolate to linear, cuspidate; about 5 cm. long (but in Patagon., usually about 1 cm.., and the whole plant 25 cm.). *Cymes* 1–3-flowered in upper axils. *Fruit* didymous, hispid, with hooks.

(Europe and N. Amer.); S. Patagon., by mouth of Rio Sta. Cruz; by Hatcher at Cabo Negro, flowering Jan. 13; W. Patagon., in valley of Rio Aysen (Dusén); Magellan, Fuegia, Ushuaia; Cape Horn.

Spegazzini gives two forms of the *G. aparine* L. var. *pseudo-aparine* Gr. viz.: (1) *Tall*, diffuse, lax, *stems* retrorsely subspinulose; *leaves* rather large. (2) *Small* and contracted. *Stems* smooth; *leaves* rather small, somewhat approaching *G. chonoense* Clos.

3. GALIUM CHÆTOPHORUM Griseb.

Low, diffuse, with smooth, tetragonal stems. *Leaves* in 4's, oblong-linear, mucronate-acute, transparent, venous, with long setæ on the nerves. *Peduncles* axillary, opposite, shorter than the leaf, 1–2-flowered; one shorter than the other, with minute, 4-leaved involucre. *Fruit* sessile, fleshy, with minute setules.

(Argentina); N. Patagon., near Rio Negro.

4. G. CHILENSE Hook. f. (including *G. chonoense* Hook. f.).

Stem retrorsely scabrid at the angles. *Leaves* in 5's or 6's, oblong-lanceolate, acuminate-awned, scabrid on the nerves, and recurved on the margins. *Peduncles* 1–5-flowered, shorter than the leaf. *Flowers* minute. *Ovaries* glabrous. *Fruit* hispid-pilose.

Chonos Archip.; Patagon. (Speg.); Fuegia.

5. G. CILIATUM Ruiz & Pav.

Glabrous herb, with branching, procumbent, tetragonal *stems*, and *leaves* in fours, lanceolate, ciliate, equal, reflexed. *Peduncles* 4-leaved, 1-flowered; *corolla* white, rotate, with acute segments, apically purple and ending in 1–2 setæ. *Fruit* glabrous.

G. CILIATUM PUSILLUM (Gill) O. Ktze. (*G. pusillum* Endl.)

Glabrous, small, rather creeping. *Stem* smooth, terete, sulcate. *Leaves* in 4's, oblong-linear, mucronate. *Peduncles* equalling the leaves, at their apex 4-bracted and 3-flowered. Immature *fruits* minutely tubercled.

(Chili; Argentina); Patagon., Rio Sehnen; Lago Argentino; "Relfen." The roots yield a dye for wool.

6. GALIUM FORSTERI Phil.

Annual? *Low*, glabrous, sparsely scabrid here and there; *stem* filiform, branching. *Leaves* in 4's, rarely 6's, spatulate-linear, obtuse. *Peduncles* axillary, equalling the leaf, solitary, 1–3-flowered. *Fruits* rather large, smooth.

Height 6 cm.; internodes slightly longer than the leaves, which are 6 mm. long.

Magellan.

7. G. FUEGIANUM Hook. f.

Annual (?), *glabrous*. *Stem* suberect, branching, glabrous. *Leaves* in 4's, elliptic-oblong, 8 mm. long, acute, obscurely 3-nerved, margins scaberulous, upper ones hispidulous. *Peduncles* terminal, in 3's, 1-flowered, very short when flowering, in fruit strong and long. *Fruits* hispid-pilose.

"Approaching *G. triflorum*, but differing by the quaternate leaves, and the invariably simple peduncles." (J. D. Hooker.)

Magellan; Fuegia.

8. G. LEUCOCARPUM DC.

Stem diffuse, tetragonal, smooth, branching. *Leaves* in whorls of 4, linear, mucronate, glabrous. *Peduncles* axillary, solitary, opposite, 1-flowered, short. *Fruit* glabrous, cream-colored.

(Peru; Chili); S. and W. Patagon., by Lago Nahuel-huapi. (Dusén.)

9. G. MAGELLANICUM Hook. f.

Perennial? *Stem* suberect, sparingly branching, minutely hispidulous at the angles. *Leaves* in 5's, linear-lanceolate, acute, glabrous, with recurved, scaberulous margins. *Peduncles* axillary, mostly solitary and 2-flowered, rarely paired and 1-flowered. *Flowers* largish. *Fruit* glabrous.

Stems 7 cm. high. "The largest flowered of the Antarctic *Gallia*." (J. D. Hooker.)

Patagon., Magellan, Cabo Negro; near Rio Chubut (here taller, less scapose, the peduncles 1–4-flowered); Fuegia, at Ushuaia (here with weak stems, often glabrous, leaves cuneate-lanceolate, mucronate, and peduncles 1-flowered).

10. G. NIGRICANS Clos.

Suberect, rather robust, branching, scabrous, with tetragonal *stems*. *Leaves* 6–7 in the whorl, oblong to oblong-lanceolate, obtuse, with recurved margin. Axillary, floral-branches, di-, tri-chotomously divided. *Peduncles* terminal, short, corymbosely branching. Immature *fruit* glabrous, very small. Plant shining black when dry.

(Valdivia); Patagon., rare in rocks by Rio Carren-leofú.

11. GALIUM PATAGONICUM O. Ktze.

Glabrous, yellowish when dry. *Stems* 30 cm. high, erect, obtuse-angled, simple or with short, floriferous branches. *Leaves* in 4's, subulate, acute, reflexed, 1 cm. by 1 mm. *Flowers* axillary, solitary, the peduncles exceeding the leaves. *Involucre* 4-leaved. *Cocci* rugulose, glabrous.

Patagon., common in rocky hills by Teka-choique and Lago Musters.

12. G. RELBUN Clos.

Herbaceous, subscabrid, pilose. *Stems* many from the caudex, fasciate, elongate, branching, tetragonal. *Leaves* in 4's, elliptic or ovate-elliptic, mucronate, margin revolute. *Peduncles* as long as the leaf, opposite or whorled, apically 4-bracted, 1-flowered. *Fruit* sessile, globose-didymous, glabrous.

(From Aconcagua southwards); N. Patagon., by Lago Nahuel-huapi.

13. G. RICHARDIANUM Endl.

Glabrous, "smoothly scabrid" and shining. *Stem* erect, 4-angled. *Leaves* in 4's, linear-oblong, acute, 1-nerved, only half as long as the internode. *Peduncles* opposite or whorled, as long as the leaves, 4-bracteolate above, 3-flowered. Young *fruits* tubercled.

(Chili, cordilleras); Patagon., Golfo de San Jorge, RR. Sta. Cruz and Gallegos; Port Gregory. "Perhaps the same as *G. ciliatum pusillum* Endl." (Speg.)

Family 107. VALERIANACEÆ. Valerian Family.

Herbs, with opposite, *exstipulate leaves*, and small, cymose or panicled *flowers*. *Calyx-tube* adnate to ovary, its limb small or wanting in the flower, often large in the fruit. *Corolla* sympetalous, epigynous, 5-lobed, slightly irregular. *Stamens* 1–4, epipetalous, usually exserted. *Ovary* 1–3-celled, only one cell with 1 suspended *ovule*. *Achene* 1-seeded. *Endosperm* little or none.

Species 275, widely distributed, most in N. Hemisphere.

1. VALERIANA Linn.

Perennials, with basal *leaves*. *Calyx-limb* of 5–15 plumose teeth (pappus), unrolled in fruit. *Corolla* funnelform-tubular, gibbous at base. *Stamens* mostly 3. *Style* entire or 2–3-lobed.

Species 175, N. Temperate and cold regions; from Himalaya to the Mediterr. region; also to the Orient; and to Northern Eurasia; thence by N. W. Amer. to Mexico, and along the Andes to Patagon.

Key to the Species.

A. Pappus none. Leaves usually entire. Bracts connate (*Phyllactis*).
  b. Leaves imbricate on the branches.
    c. Leaves thick, retuse, narrowing basewards, ciliate. Flowers 5–7, 5-cleft, yellow. Corolla-tube long. Stamens 5. *sedifolia.*
    c2. Leaves spatulate, some rosulate apically, ovate. Flowers subsessile. Stamens 3. *magellanica.*
  b2. Radical leaves spatulate, attenuate-petiolate. Scapes longer. Panicles racemose-spicate, white. Root coarse. *macrorhiza.*
  b3. Leaves mostly radical, oblong-linear, lobed-pinnatifid, lobes rounded. Cauline leaves pinnatifid. Panicle short. *clarionæfolia.*
  b4. Leaves radical, long-petiolate, oblong, basi-cordate, subsinuate; cauline leaves ovate, the upper sessile, toothed. Panicle compound. Rhizome long, emitting fibers. *lapathifolia.*
  b5. Leaves obovate to ovate-lanceolate, fleshy, sinuate to pinnatifid, long-petiolate, the upper sessile. Panicle long. Fleshy plants. *carnosa.*
  b6. Leaves pinnatifid, segments many, linear, acute. Panicle spike-like, interrupted. Stem hollow. *polystachya.*
A2. Pappus plumose (*Euvaleriana*).
  b. Leaves radical, spatulate, incise-toothed, fleshy, attenuate-petiolate. Flowers glomerulate on spike-like scapes. Stamens 3. Root napiform. *crassiscaposa.*
  b2. Leaves lanceolate, entire, sessile, glabrous; upper basi-cordate. Corymbs terminal, decompound. *salicifolia.*
  b3. Leaves oblanceolate, the lower entire, the upper basi-auricled, some pinnatifid. Panicle contracted, white. *chubutensis.*
  b4. Leaves sometimes fleshy, the lower entire, the upper pinnatifid. Panicle long, lax. *laxa.*
  b5. Leaves ovate or oval, petiolate, glabrous.
    c. Leaves few, toothed-incised; upper pinnately-parted; floral linear. Panicle lax, few-flowered. *laxiflora.*
    c2. Leaves all toothed; upper oval-oblong. Cyme contracted. Rhizome tuberous. *obtusifolia.*
  b6. Lower leaves ovate; upper lyrate-pinnatifid. Panicle lax, large. Annual. *virescens.*
A3. Leaves lyrate-pinnatisect, segments oblong, large above. Panicle thyrsoid. Fruit hoary. *regularis.*

Phyllactis Pers. as a genus is polymorphous, with or without stems, leaves entire or variously dissected, and with dense or lax cymes with spreading corolla-limb; stamens 3, and *fruit without pappus*, but crowned by the non-accrescent crown. Benth. & Hook. assign to it 30 Andine-Mexican species. Eng. & Prantl place it as a section of *Valeriana*, with 10 species, mostly stemless, leaves entire and bracts connate, no pappus, corolla 3–5-lobed, with long tube. (Fig. of *V.* (*Phyllactis*) *rigida* R. & P. of great altitudes in Peru; in Eng. & Prantl, iv, 4, p. 180, B.)

1. VALERIANA CARNOSA Smith. (*V. magellanica* Lam.)

Glabrous. *Stem* erect, 60 cm., rather rigid, simple. *Leaves* mostly radical, long-petiolate, obovate to obovate-lanceolate, fleshy, sinuate, serrate, or incised-pinnatifid, lobes and sinuses obtuse, the uppermost leaves oblong, sessile. *Panicle* terminal, elongate; its branches suberect. *Bracts* acuminate, basally connate. Lateral peduncles dichotomizing, 6–8-flowered. *Fruits* oblong, glabrous, retrorsely denticulate.

Patagon., by Lago Nahuel-huapi; mts. of Chubut; Rio Sta. Cruz; Cabo Negro; Magellan; N. and E. Fuegia (Dusén, "a steppe-plant, everywhere over the steppes").

2. V. CHUBUTENSIS Speg.

Simple, glabrous, perennial herb, with slender *root* and fistulous, terete to tetragonal *stems*, 40–80 cm. high. *Leaves* thin, membranaceous; the radical entire, oblanceolate, rather obtuse, long-attenuate-petiolate; the cauline acute, few, remote, lanceolate, basally auricled-connate and there subpuberulous; the lower toothed, the upper pinnatifid, and the uppermost linear. *Panicle* not much branching, contracted, with linear bracteoles, white *flowers*, glabrous *achenes*, and a crown of 12 plumose setulæ.

Chubut, in wet places along Carren-leofú.

3. V. CLARIONÆFOLIA Phil.

Glabrous herb. *Stem* terete, 15 cm. high. *Leaves* coriaceous, nearly all radical, rosulate, oblong-linear, lobate-pinnatifid; lobes 8 pairs, suborbicular, usually imbricating, decurrent. Cauline leaves 3 pairs, attenuate-petiolate, small, deeply pinnatifid, segments linear. *Panicle* short, compact, few-flowered. *Corollas* rather large. *Anthers* and *stigma* included. *Fruit* glabrous, crowned by the short calyx; no pappus.

(Chili); Patagon., by Nahuel-huapi, Chubut; Rio Sta. Cruz; Valley of Lago Blanco, Fuegia. The Patagonian forms have lax diffused panicle, lobes of the leaves obovate, often toothed on both sides in the upper part.

4. VALERIANA CRASSISCAPOSA O. Ktze. (*V. moyanoi* Speg.)

Herb, 15 cm. high, with radical *leaves*, spiciform *scape* from the alternate glomerules. Root branching, napiform. *Leaves* rosulate, fleshy, spatulate, incised-toothed, 3 cm. long, attenuate to a broad petiole. Bracts oblong, acute. *Flowers* sessile. *Corolla-tube* very short. *Stamens* 3. *Fruit* compressed, 4 mm. long, with many plumose *pappus-hairs*, 6 mm. long.

(Tucuman); S. Patagon., by Lago Argentino, Chubut.

5. V. LAPATHIFOLIA Vahl. (Speg. sub *Phyllactis*).

Leaves radical, long-petioled, oblong, acute, cordate or rounded at the base, entire, margins obscurely sinuate. Cauline leaves ovate, 45 cm. long, shortly petiolate, the uppermost often sessile and dentate; nerves slightly pilose above, petioles ciliate at their base. *Panicle* compound, broadly ovate, bracts linear, obtuse, ciliate-dentate. *Rhizome* long; horizontal, sending out fibrous roots from its nodes.

Magellan, in damp woods; by Hatcher at Punta Arenas. "Leaves villous above on the nerves" not so in these specimens. Fuegia. (Speg.)

6. V. LAXA Phil.

Herbaceous, glabrous, nearly a meter high, terete, fistulous. *Leaves* fleshy; the radical entire, oblong, doubly attenuate, sinuate, equalling the petiole. Cauline pinnatifid, segments 3–5-jugous, those of the upper leaves all equal, oblong or linear, obtuse, 1–2-toothed on both sides. *Panicle* long, lax. *Branches* about 6 pairs trichotomous, branchlets few-flowered; *corolla* mediocre. *Genitalia* included, fruit compressed, lageniform, glabrous. *Calyx* plumose.

(Chilian Andes); Chubut, in rocks along Carren-leofú and by Lago Cholila. The leaves vary much, sometimes fleshy.

7. V. LAXIFLORA DC.

Perennial, glabrous undershrub, ascending. *Leaves* petiolate, few, ovate or oval, irregularly toothed-incised. Floriferous branches exceeding the leaves, rather naked. Upper leaves pinnatipartite, the lobes 1–2 cm. on each side, entire. *Floral leaves* linear. *Branches* of the lax *panicle* opposite, apically trifid, few-flowered.

(Chili); Patagon.

8. VALERIANA MACRORHIZA (Poepp., sub *Phyllactis*).

Perennial, glabrous herb, with coarse root. Radical *leaves* spatulate, obtuse, attenuate to a petiole, twice as long as the limb. *Scapes* slightly exceeding the leaves. *Panicle* racemose-spicate; racemules opposite, the lowest stalked. *Floral leaves* linear. *Petals* white; *stamens* exsert.

(Chili); Chubut, in mountains by Rio Carren-leofú.

V. MACRORHIZA PUMILA Speg.

Stemless, with a thick, tuberous rootstock, 20 mm. diam., having long and thick fibrous roots. *Leaves* rosulate, obovate or spatulate, entire, attenuate downwards, then dilating into a pericladium, with 3–5 parallel nerves. *Scapes* simple, 2–6 cm. high, bearing a small, ovate *flower-head.*

Patagon., Chubut cordilleras, near Carren-leofú.

9. V. MAGELLANICA Hombr. & Jacq. (non. Lam., Speg. sub *Phyllactis*).

Cespitose, low; branches aggregate, some erect, some spreading, short, subdenudate, divided at base. *Leaves* closely imbricate along the branches and rosulate-crowded at the apex, spatulate; their limb ovate, short, attenuate-petiolate, dilated basewards, and ciliate-denticulate. *Flowers* subsessile among the upper leaves, 2-bracteolate, 3-staminate.

Magellan.

V. MAGELLANICA AZORELLOIDES Speg.

Woody, botryose-branching trunks; forming large, hemispherical turf, 25–125 cm. in diam., as of *Azorella*. *Leaves* imbricate-rosulate at ends of the branches, elliptic-ovate, obtuse, flat, plicate when dry, with pectinate, ciliolate petiole. *Fruit* glabrous, oblanceolate, obtuse both ways, crowned by the calyx-teeth.

S. Patagon., near Lago Argentino, at Karr Aike.

(V. MOYANOI Speg. = V. CRASSISCAPOSA O. Ktze.)

Chubut; S. Patagon., by Lago Argentino.

10. VALERIANA OBTUSIFOLIA DC.

Erect, glabrous, with spindle-shaped, tuberous *root* and obtuse *leaves*. Lower leaves obovate to oval-petiolate; upper sessile, oval-oblong; all the leaves more or less coarsely toothed, especially towards the base. *Cyme* contracted.

(Chili); S. Patagon., by Hatcher at Coy Inlet, Dec. 30, 1896; B. Brown at Killik Aike, Jan. 5, 1900.

11. V. POLYSTACHYA Smith. (Benth. & Hook. sub *Phyllactis*.)

Perennial. *Stem* erect, simple, short, or 1 meter tall, 1 cm. thick or more, fistulose, substriate or glabrous. *Leaves* usually pinnatifid, with many segments, slender, glabrous, gradually dilated basewards, subconnate. Lateral lobes opposite, linear, acute, entire or slightly toothed, or with 1 or 2 large teeth. *Flowers* somewhat polygamous, in interrupted spike-like *panicles*.

(S. Brazil; Argentina); N. Patagon., by Rio Negro.

12. V. REGULARIS Clos.

Root short, undivided. *Stem* about 60 cm. high, erect, terete, substriate, shining. Radical and *stem-leaves* lyrate-pinnatisect; the segments generally from the base of the petiole, 9, irregularly oblong, the upper ones larger, toothed or subentire. *Panicle* thyrsoid, its branches sometimes from the base, lax, symmetrical, the pedicels tri-di-chotomously divided. *Flowers* shorter than the lanceolate, acute, entire bracts, appressed-puberulous. *Fruit* ovate, lageniform, hoary-puberulous.

(Chili); N. Patagon., in marshy places by Lago Nahuel-huapi.

13. V. SALICIFOLIA Vahl. (*V. salicariæfolia* Vahl.)

Glabrous. *Stems* herbaceous, simple-striate, not climbing. *Leaves* all undivided, lanceolate, entire, sessile; upper leaves basi-cordate. *Corymbs* terminal, decompound.

(Near Buenos Ayres); N. Patagon. (?).

14. V. SEDIFOLIA d'Urv. (sub *Phyllactis*).

Suffruticose; branches ascending, short. *Leaves* imbricate, thick, coriaceous, retuse, narrowing at base, minutely ciliate. *Flowers* 5–7, supported by the upper leaves; 5-cleft, yellow, with long corolla-tube. *Stamens* 5.

Magellan; Fuegia; Falklands; Staaten I.

15. VALERIANA VIRESCENS Clos.

Glabrous or pubescent. *Leaves* membranaceous; the radical ovate, entire or lyrate, 3-lobed; the cauline lyrate-pinnatifid; the uppermost narrow-pinnatifid. Panicle ample, lax. *Fruit* small, pallid, puberulous, with a crown of 10–12, not long, plumose setulæ.

Chubut, common in upper meadows, near Carren-leofú.

2. VALERIANELLA Pollich (1776). (*Plectritis* DC., *Fedia* Moench.)

Annual herbs, mostly with undivided *leaves* and no pappus-like crown on the fruit. *Flowers* in a head. *Corolla* spurred or gibbous, the tube at least twice as long as the lobes. *Stamens* 3. The sterile locules of the fruit wing-like or wanting, the *fruit* becoming trigonal. *Calyx* scarcely visible, even in the fruit.

Species nearly 10, on the Pacific side of N. and S. Amer.

V. SAMOLIFOLIA (DC.) Benth. & Hook.

A span to 30 cm. high. *Verticillastrate* clusters 2–4, small. *Bracts* slender-subulate (the uppermost sometimes 3-parted). *Corolla* 2 mm. long, sub-bilabiate, with short spur. *Achene-like* fruit resembling buckwheat, subglabrate, to 2 mm. long.

(Oregon and California.)

V. SAMOLIFOLIA PUSILLA Speg.

Low, 10–30 mm. high, *stems* simple; *leaves* broadly obovate, obtuse, as long as, or longer than, the internodes.

Chubut, by Rio Carren-leofú.

Family 108. DIPSACACEÆ. Teasel Family.

Herbs, with opposite or rarely whorled, *exstipulate leaves*, and perfect, sympetalous *flowers* in involucrate heads. Calyx-tube adhering to the ovary. *Corolla* epigynous. *Stamens* 2–4, epipetalous, *anthers* versatile. *Ovary* 1-celled, 1-ovuled. *Style* and stigma simple. *Achene* crowned by the persistent calyx-lobes. *Endosperm* fleshy.

Species 140, natives of the Old World.

DIPSACUS Linn.

Tall biennials or perennials, rough and prickly, like thistles; with unusually large *leaves* and blue, 4-merous *flowers*, in terminal, peduncled *heads*. *Involucral bracts* rigid or spiny-pointed. *Involucels* 4–8-ribbed. *Calyx-limb* and corolla-limb 4-lobed. *Stamens* 4.

Species 15. (Fig. in Eng. & Prantl, iv, 4, p. 183, J, K.)

D. SILVESTRIS Huds.

Stout *prickles* on stem and leaves. *Leaves* sessile or connate-perfoliate upwards, lanceolate or oblong, or acuminate and entire at the top, toothed or pinnatifid below. *Scales* of the receptacle straight-pointed.

(Europe and the Orient; naturalized in N. Amer.); N. Patagon., recently introduced and spreading rapidly over Patagon. Its roots are used as a popular medicine for chest diseases; called by the Spaniards "Carda de la Sierra." The Fuller's Teasel (*D. fullonum* L., with hook-pointed receptacular scales) is supposed to be a cultivated variety of this species.

Family 109. CAMPANULACEÆ. Bellflower Family.

Herbs (rarely tropical woody plants), with alternate, exstipulate *leaves*, and perfect, 5-merous, sympetalous *flowers*. *Calyx-tube* adnate to the ovary. *Corolla* epigynous, regular or irregular. *Stamens* 5, filaments separate or connate. *Ovary* 2–5-celled, with axile *placentæ*, or rarely 1-celled, with parietal placentæ. *Style* 1, mostly lobed. *Seeds* numerous, small, with endosperm.

Species 1,500, widely distributed.

KEY TO THE GENERA.

A. Flowers actinomorphic. Anthers free (CAMPANULOIDEÆ). Stamens epigynous, not on the corolla. Ovary immersed.
  b. Filaments wide at base. Capsule globular, 2–5-valved. Flowers in cymes. 1. *Wahlenbergia*, p. 752.
  b2. Filaments short, hairy. Capsule prismatic, 3-celled, opening by 3 lateral windows. Flowers axillary. 2. *Legouzia* (*Specularia*), p. 752.
A2. Flowers zygomorphic; synantherous, with filaments also more or less connate (LOBELIOIDEÆ).
  b. Corolla-tube open dorsally to the base.
    c. Fruit a globular, 2-celled capsule, dehiscing loculicidally, with 2 subapical valves. Odd sepal dorsal. Proterandrous. 3. *Lobelia*, p. 753.

*c*2. Fruit a berry. Anthers 2 apically tufted, 3 naked. Mostly creeping herbs, with broad leaves and 1-flowered peduncles. Often diœcious.
4. *Pratia*, p. 753.

*b*2. Corolla-tube not open behind. Capsule indehiscent, or dehiscing by a lid. Filaments connate at least below; 2 anthers with 1 or a few apical bristles, 3 naked. Habit of *Pratia*.
5. *Hypsela*, p. 754.

1. WAHLENBERGIA Schrad.

Herbs, or with woody base and varying habit. Generally with blue, nodding, regular *flowers* and erect, 2–5-valved *capsule*, dehiscing at the apex. *Corolla* more or less deeply 5- or rarely 3–4-cleft. *Stamens* epigynous, filaments wide at base; *anthers* free. (*Campanula* has the capsule dehiscing laterally.)

Species 70, chiefly in S. and W. Africa; the Mediterr. region; Himalaya; Japan; Malaya; Tasmania; New Zeal.; also in trop. Amer. In the Southern Hemisphere it takes the place of *Campanula* in the Northern. (Fig. in Eng. & Prantl, iv, 5, p. 58.)

W. LINARIOIDES DC.

Glabrous, erect, perennial herb, with simple stem, or branching from the base. *Leaves* linear, subdenticulate. Pedicels terminal, long, naked. *Calyx-tube* obconical; its lobes triangular-acuminate, as long as the tube. *Corolla* funnelform, 5-cleft, half longer than the calyx-lobes. *Capsule* long, obconical, 2-celled. *Seeds* lenticular.

(Chili; S. Brazil; used medicinally against colic); N. Patagon., near Rio Negro.

2. LEGOUZIA Durand, 1782. (*Specularia* Heister, 1830.)

Venus's Looking-glass.

Low annuals, with axillary, bluish *flowers*. *Calyx* 5-(3–4-) lobed. *Stamens* 5, separate. *Corolla* 5-lobed. *Stamens* 5, separate; filaments short, hairy. *Stigmas* 3. *Capsule* prismatic-oblong, 3-celled, opening by 3 lateral valves.

Species 10, chiefly in Northern Hemisphere.

L. PERFOLIATA (Linn. sub *Campanula*) Britton.

Leaves roundish-ovate, clasping by the cordate base, toothed, slightly hairy. *Flowers* sessile, 1–3 in the axils, only the upper ones having an expanded corolla. *Capsule* straight, opening below the middle. *Seeds* lenticular.

(N. Amer.); Patagon., Chubut, in elevated meadows.

3. LOBELIA Linn.

Chiefly herbs, with alternate or basal *leaves* and zygomorphous *flowers* usually in terminal racemes or panicles. *Corolla-tube* divided on the dorsal side. *Stamens* 5, mostly free from the corolla, all the *anthers* united around the 2-cleft *style;* 2 anthers hairy-tufted. *Ovary* 2-celled, many-ovulate. *Fruit* a capsule.

Species 225, widely dispersed. (Fig. in Eng. & Prantl, iv, 5, p. 66, A.)

L. FLUVIATILIS Br.

Glabrous. *Creeping*, with ascending, angulate branches. *Leaves* oval, serrate, subciliate, sometimes entire. *Pedicels* bractless, longer or shorter than the leaves. *Calyx-tube* long-ovoid, pubescent, its lobes linear. *Corolla* 4 times as long as the calyx-lobes, white (?). *Anthers* glabrous, the inferior pair tufted.

(Near Port Jackson, Australia, the type); S. Patagon., by Hatcher, near Cape Fairweather, Oct., 1896.

The Patagonian form is not creeping, has entire leaves, and the calyx about three-fourths as long as the corolla.

4. PRATIA Gaudich.

Slender, creeping herbs, rarely ascending or erect, with alternate, toothed, broad *leaves*, and axillary, 1-flowered *peduncles;* or abortively diœcious. *Calyx-tube* obovoid, adnate, wanting in male flowers, lobes 5, subequal. *Corolla* oblique, its tube dorsally parted to the base, its lobes slightly unequal or bilabiate. *Stamen-tube* free or attached to the base of the corolla. *Anthers*, 2 apically awned or tufted; the other 3 naked. *Ovary* inferior, 2-celled, with many *ovules*. *Fruit* a berry, crowned by the calyx-lobes.

(Fig. in Eng. & Prantl, iv, 5, p. 68.)

Species 16, Himalaya, Malaya, Java, Australia, New Zeal., Auckland Is., and in S. Amer., from Bolivia and Brazil southward.

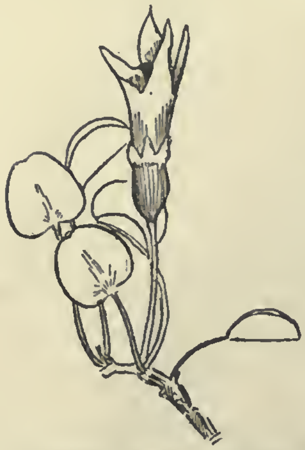
1. **Pratia longiflora** Hook. f. (including *Hypsela atacamensis* Phil.).

Lax-cespitose, glabrous. Stem rather stout, nodose, subsimple. *Leaves* few, erect, fleshy, long-petiolate, ovate, obtuse, entire or obscurely sinuate. *Peduncles* almost terminal, as long as the leaves, bractless. *Calyx-segments* ovate, acute. *Corolla-tube* cylindrical, elongate, thrice as long as its spreading lobes.

(Chilian Andes); Patagon.; Magellan.

Leaves narrower and smaller than of next; and corolla-tube longer and narrower.

Fig. 95.



Pratia repens. — Flowering-shoot with leaves, slightly reduced.

2. **P. repens** Gaud.

Small, branching, creeping. *Leaves* on long petioles, thickish, induplicate, orbiculate, subcordate, sinuate-crenate. *Pedicels* axillary, few, as long as the petioles, with 2–3 very small, acute *bracteoles*. *Calyx-lobes* ovate, acute, shorter than the obovoid tube, one-fifth as long as the rose-violet *corolla*. *Seeds* pale fuscous. (Fig. 95.)

Magellan; S. Patagon., by Hatcher at Rio Coy, and Nordenskj. at Rio Gallegos; Fuegia, passim, by Dusén; Falklands, "of steppe-flora, by brooks, and in forests with poor rain-fall."

"*Pratia repens* Gaudich. and *Hypsela reniformis* Presl. found in the Andes are very much alike." (Eng. & Prantl.) (*Hypsela* has the corolla not dorsally parted.)

5. HYPSELA Presl.

Dwarf, *creeping* or cespitose herbs, with radical or alternate *leaves*, broad, with a thick petiole, and axillary peduncles, each with a small, white to pinkish *flower*. Corolla-tube not parted, its lobes slightly unequal and spreading. Two anthers, with 1 or more apical setæ; three not appendaged. *Fruit* a capsule.

Species 5, in the southern Andes.

1. **H. longiflora** Benth. & Hook. (*Pratia atacamensis* Phil.)

Small, creeping, glabrous, with ovate-orbicular, entire, noncordate *leaves*, the petioles much exceeding the blades. *Calyx-teeth* stout, triangular, broader than long. *Stamens* and *styles* as long as the not-cleft, subregular corolla, which is white to violet.

(Chili); Magellan.

(The above characters are from Philippi's plant.)

2. HYPSELA RENIFORMIS Presl.

Glabrous, creeping. *Leaves* orbiculate-reniform, petioles as long as the limb, pedicels shorter. *Calyx-tube* campanulate, exceeding the ovate lobes. *Corolla-tube* 2–4 times as long as the calyx-lobes; corolla-lobes ovate-acuminate.

(Andine, at Antisana Volcano in Quito and to Chili); S. Patagon., at Coy Inlet, by Peterson, and at Cabo Negro; Killik Aike. (B. Brown.)

(See note to *Pratia repens.*)

Family 110. GOODENIACEÆ.

Herbs or shrubs, with usually alternate or radical, *exstipulate leaves*, and no milky juice, and with perfect, mostly irregular, 5-merous *flowers*, having adnate calyx and sympetalous *corolla*. *Stamens* 5, alternipetalous, epigynous, with *anthers* usually distinct. *Ovary* 1–2-celled. *Style* simple or 2-cleft, with an indusium enclosing the stigma. *Ovules* 1 or more in the cells. *Fruit* a drupe or capsule. *Embryo* straight in axis of endosperm.

Species 200, chiefly Australian; some in tropical Asia, New Zeal.; with stragglers in Afr., W. Indies, Pacific Is. and Antarctic Amer.

SELLIERA Cav.

Low, perennial herbs, with *creeping* stem and 1-lipped, purplish *corolla*, with valvate lobes. Mouth of indusium naked. *Peduncles* long, 1-flowered, with 2 small bracts midway. *Fruit* fleshy, indehiscent. *Seeds* 2 or more, ascending.

Species 2, Australia; one of these is also in New Zeal. and in S. Amer., viz.:

S. RADICANS Pers.

Glabrous, rooting at the nodes, with sessile to long-petioled oblanceolate, thickish, glabrous *leaves*, entire and subacute, 3–7 cm. long.

(Austral.; New Zeal.); Chiloe, in moist places by the sea; W. Patagon.

Family 111. Candolleaceæ (or Stylidieæ).

Mostly herbs, with radical, or sparse or falsely-whorled cauline, exstipulate, entire *leaves; flowers* with calyx-tube adnate to the ovary and limb 5-lobed or bilabiate, and with corolla sympetalous, usually irregular. *Stamens* 2, connate with the style. *Ovary* inferior, 2-celled, or at the base 1-celled. *Stigmas* 2. *Ovules* numerous, with endosperm.

Species 100, chiefly Australian; some in tropical Asia, New Zeal. and Antarctic Amer.

PHYLLACHNE Forst.

Low, perennial herbs, with rosular or imbricating leaves. Corolla nearly regular, campanulate.

Species 9, New Zeal.; also 1 in Austral., and 1 in Patagon.

P. uliginosa Forst. (*Forstera muscifolia* W.)

Moss-like herbs. *Flowers* solitary on the peduncles, nearly sessile among the leaves. *Capsule* turbinate, indehiscent.

E. and W. Magellan, Fuegia to Cape Horn. (Fig. in Eng. & Prantl, iv, 5, p. 83, F.) "Flourishes most in the rainy forest region, and to 700 m. of elevation." (Dusén.)

Family 112. Calyceraceæ.

Procumbent or low herbs, with radical or alternate, exstipulate *leaves* and regular, superior, sympetalous *flowers* on a common receptacle enclosed by a common involucre; usually with *chaff* subtending the individual flowers. *Calyx-tube* 5-angled, leading to as many teeth, persisting on the achenes. *Stamens* usually 5, epipetalous, connate. *Ovary* 1-celled, 1-seeded. *Style* undivided. *Seed* with endosperm.

Species 23, all S. American; 2 in Brazil; most in the Chilian Andes. "They are carried down thence to the plains (of Patagonia, etc.) by the mountain streams." (J. Ball.)

Key to the Genera.

A. Flowers all similar (except sometimes in *Boopis*).
  b. Involucrate bracts connate below. Achenes free, ribbed or prismatic. 1. *Boopis*, p. 757.
  b2. Involucre connate high up, but 12-toothed. 2. *Gamocarpha*, p. 761.
  b3. As *Boopis*, but achene with obtuse calyx lobes. 3. *Nastanthus*, p. 763.

*A*2. Flowers of center sterile; marginal flowers fertile, their fruits connate and crowned by the thorny calyx. 4. *Acicarpha*, p. 764.

1. BOOPIS Juss.

Glabrous; *stem* ascending and branching, or scapiform and 1-headed. The *heads* pedunculate; all the *flowers* in a head are of the same character, or with a few smaller sterile flowers. *Involucrate* bracts partly connate. *Achenes* free, crowned by the calyx-teeth.

Species 10, in Chilian Andes. (Fig. in Eng. & Prantl, iv, 5, p. 86, A–D.)

Key to the Species.

A. Leaves fleshy.
- *b*. Leaves linear, subentire or subpinnate. *chubutensis.*
- *b*2. Leaves lanceolate or narrower, sessile, mostly amplexicaul, toothed. Calyx-lobes and achene dimorphous; the achene winged. *crassifolia.*
- *b*3. Leaves oblanceolate or obovate, long-attenuate-petiolate. Involucre 1-leaved, 5–8-toothed. *patagonica.*
- *b*4. Cauline leaves linear, subentire or basally appendaged; lower leaves rosulate. Stems concrescent, diverging above, 1-headed. *australis.*
- *b*5. Leaves ovate to subspatulate, entire, the lower with whitish petioles. *alpina.*
- *b*6. Leaves rounded, toothed, with long, broad petioles. Flowers long, green, without involucre. *ameghinoi.*

*A*2. Leaves not fleshy.
- *b*. Leaves entire or nearly so, linear.
  - *c*. Short, leafy branches, with heads sessile amid the leaves. *filifolia.*
  - *c*2. Scape remotely leafy, apically 1-headed and with axillary heads. *leptophylla.*
- *b*2. Radical leaves linear-lanceolate, incised, often recurved, attenuate-petiolate. Peduncles 1-headed, leafy near top. *squarrosa.*
- *b*3. Radical leaves spatulate, half-pinnatifid, upper leaves simpler, leafless at top. Heads terminal, 1 (rarely 2). *scapigera.*
- *b*4. Leaves pinnatisect.
  - *c*. Segments capillaceous. Corolla-tubes slender. Achenes winged. *anthemoides.*
  - *c*2. Segments narrow-linear. Head solitary, terminal, on a long peduncle. *rigidula.*
  - *c*3. Segments oblong, pinnately toothed. Cauline-leaves similar but simpler. Flowers white. *multicaulis.*
- *b*5. Leaves pectinate, oblong-linear. Corolla short, its tube nearly cylindrical. *gracilis.*
- *b*6. Leaves laciniate. *laciniata.*

1. B. alpina Poepp. (*Gamocarpha poeppigii* DC.)

Leaves fleshy, green to glaucous, plicate, ovate or subspatulate, entire, the lower with a whitish *petiole*.

S. Patagon., by Rio Chico de la Sta. Cruz.

2. Boopis (?) ameghinoi Speg.

Leaves rounded, dentate, with long, broad petioles. *Flowers* long, green, without any involucre.

Patagonia, near Lago Argentino.

3. B. anthemoides Juss.

Leaves pinnatipartite, the lobes capillaceous. Receptacle-pales few and slender. *Calyx-lobes* acute or mucronate. *Corolla-tube* slender. *Achenes* smooth, angles winged.

(Chili to Bonaria, near Bahia Blanca); N. Patagon., at the confluence of Rios Limay and Neuquen.

B. anthemoides subscandens Speg.

Involucre far surpassing the flower-head.

N. Patagon., by Rio Negro.

4. B. australis Griseb.

Fleshy perennial. *Stems* concrescent from their base to the middle, diverging upwards like a dense corymb, 1-headed. *Lowest leaves* rosulate; cauline linear, subentire, or above appendaged. *Involucral lobes* entire, ovate-lanceolate, rather obtuse, crowned by the head. *Receptacle* with no or fugacious pales.

S. Patagon., by Rios Chico and Sta. Cruz; Magellan., in sandy maritime places; N. and E. Fuegia, "of the steppe-flora." (Dusén.)

5. B. chubutensis Speg.

Glabrous, green, perennial, subcespitose. *Leaves* numerous, very rosulate, *thick-fleshy*, narrowly linear, subrevolute, entire or remotely and briefly pinnate; apex and teeth acute, mucronate. *Scapes* solitary or few, erect, naked, scarcely equalling the leaves, 1-headed; heads rather large, hemispherical; *involucre-leaves* 5–8, ovate-triangular, acute, entire or few-toothed. *Flowers* crowded, free; *ovaries* turbinate, the lobes 5, narrow-lanceolate, acute. *Corolla* white, cylindraceous-turbinate, 5-toothed. *Stamens* 5, inserted at the middle of the tube. *Style* long, exsert, scarcely thickened upwards.

Chubut, in dry rocks along Rio Chubut.

6. Boopis crassifolia A. Gray.

Glabrous. *Stem*, 20–30 cm. high, with branches leafy to the top. *Leaves* fleshy, sessile, mostly amplexicaul, lanceolate or narrower, repand-toothed. *Heads* shortly peduncled. *Involucre* fleshy, deeply 5–7-cleft, its segments oblong. *Calyx-lobes* of 2 kinds, broad-triangular and narrower. *Receptacle-pales* filiform, with spatulate apex. *Achenes* mostly 5-winged, dimorphous, the larger crowned with 4–5 spines, the smaller with acute lobes.

Patagon., widely distributed here, in sandy soil by the coast, and on the higher plateau.

B. crassifolia spinuligera Speg.

Taller, 25–50 cm., coarsely branching. *Leaves* sessile, elliptic or subspatulate (40 mm. by 12 mm.), irregularly repand-toothed; the teeth mucronulate or spiniferous.

N. Patagon., by Rio Negro and Bahia San Blas.

7. B. filifolia Speg.

Glabrous, stemless, with filiform *rhizome*, and short, fasciculate-leafy *branches*. *Leaves* narrow-linear, entire, obtuse. *Heads* solitary, acrogenous, sessile amid the leaves, mid-sized. *Involucre* hemispherical, 6–12-toothed. *Achene* obscurely pentagonal.

S. Patagon., by Rios Sta. Cruz and Chico; between San Julian and Rio Deseado.

8. B. gracilis Phil.

Glabrous, branching annual, about 22 mm. long, high, glaucous. *Leaves* pectinate, oblong-linear in outline, with 3–5 teeth on both sides, the upper shorter-toothed, the uppermost entire. *Involucral* scales connate more than half way, broad-triangular, equalling the flowers. *Pales* very few, hair-like. *Corolla* short, its tubes subcylindrical. *Fruit* 5-costate.

(Chili); Chubut, in pastures near Carren-leofú.

9. B. laciniata Ball.

Leaves laciniate. Cetera?

N. Patagon., on gravelly beds of Rios Negro and Chubut.

10. B. leptophylla Speg.

Glabrous, tall. Radical *leaves* crowded, long-linear, obtuse, entire or apically lobed. *Scape* erect, angulate-striate, remotely leafy, bearing an apical *flower-head*, and some additional, pediceled, axillary heads. Involucre 5–8-cleft, with long segments. *Achenes* sharply pentagonal, white, smooth, crowned by the calyx-lobes.

S. Patagon., swampy sands by Rio Chico; along Golfo de San Jorge. Stamens inserted in the throat of the corolla-tube.

11. BOOPIS MULTICAULIS Phil.

Glabrous. *Stems* 30 cm. high, several from the root, erect, subnude, 1–3-headed. *Radical leaves* 9 cm. long, deeply pinnatifid, nearly pinnate; petioles naked to their middle. Lobes 4–5 pairs, oblong, obtuse, pinnatifid-toothed. *Cauline leaves* in 2's or 3's, subsessile, pinnatifid, their segments at length entire. *Peduncles* 7 cm. long, naked. *Involucral scales* entire, attenuate, or 1 or 2 of them spatulate, 3-toothed. *Pales* lanceolate to setaceous. *Corolla* long, with white limb.

(Andes); Chubut, in rocks by Carren-leofú.

B. MULTICAULIS PATAGONICA O. Ktze.

Stems short, 5 cm. long. *Involucral* lobes mostly leafy-toothed.

Patagon.

12. B. PATAGONICA Speg. (*B. alpina* Speg. non Poepp.)

Low, stemless, glabrous perennial, green-glaucous. *Leaves* oblanceolate, or obovate, fleshy, long-attenuate-petiolate. *Heads* subsessile, turbinate. *Involucre* 1-leaved, 5–8-toothed, or lobed, the lobes often obtuse and very large. *Pales* none. *Flowers* numerous; corollas white, 5-toothed cylindraceous. *Stamens* inserted near the base of the tube. *Style* filiform, long-exserted. *Ovary* 5-costate, glabrous.

S. Patagon.; in dry places near Chonkenk Aike by Rio Chico; and between San Julian and Rio Deseado.

13. B. RIGIDULA Miers.

Stems simple, erect, angulate-striate, flexuose. *Leaves* pinnatisect, segments and rachis narrow-linear, 4–5 pairs and a terminal one, divaricate-mucronate, rigid, coriaceous, revolute. *Head* solitary, terminal, long-peduncled. *Involucre* connate, broad, 10-cleft nearly to middle. *Segments* narrow, 3-nerved, aciculate. *Flowers* equal. *Calyx-lobes* obscurely 3-toothed at apex.

(Chili, Argentina); Patagon.

Grisebach regards the above as a variation of *B. anthemoides*, with broader leaf-segments, and sometimes with 10 or 5 involucral lobes.

BOOPIS RIGIDULA PATAGONICA Hieron.

Leaf-segments very narrow-linear. *Involucres* of larger heads 8-cleft, of smaller heads 5-cleft; the lobes triangular, ending in a subulate tooth; margins toothed. *Flowers* shorter. *Calyx-segments* 1–3 for each achene.

N. Patagon., mostly by hills near Rio Negro; near mouth of Rio Chubut.

14. B. SCAPIGERA Remy. (Plate XXVI.)

Stems numerous, scapiform, naked or sparsely leafy at top, 12–15 cm. high. *Radical leaves* rosulate, spatulate, half-pinnatifid, long-attenuate, glabrous. *Upper leaves* shorter, subentire. *Heads* terminal, solitary, rarely 2. *Involucre* 5–7-leaved, its leaves short, connate. Outer *pales* of receptacle dilated-leafy; inner narrow. Corolla tubular, its limb of 5 oblong, 3-nerved divisions. Filaments united at base. Style protruding, subcapitate. Achenes crowned by the 5 persisting, obtuse calyx-leaves.

Chili; S. provinces; by Hatcher near Rio Sta. Cruz. (Determined from Remy's description in Gay's *Flora chilensis*.)

15. B. SQUARROSA Miers. (*B. australis* Dcne. non Gris.)

Glabrous, subcespitose; *stems* or peduncles subscapiform, very numerous. Radical *leaves* many, and other cauline ones shorter, linear-lanceolate, incised-serrate, the segments remote, angulate, mucronate, often subrecurved, narrowed to a long, flat petiole. *Peduncles* 1-headed, leafy under the apex. *Involucre* cup-shaped, 5-cleft beyond the middle. *Segments* linear, acute, toothed. *Pales* shorter than the flowers, linear-spatulate.

Magellan.

B. SQUARROSA var.

Leaves and *scapes* shorter and thicker than in the preceding.

S. Patagon., by Rio Chico.

2. GAMOCARPHA DC.

Involucre dentate, consisting of about 6–12 scales, connate high up. Receptacular fimbriæ acute, connate in alveoli. *Flowers* all fertile. *Calyx-lobes* 5, elliptical, obtuse. *Corolla* 5-cleft, 10-nerved. *Anthers* included, wingless, tailless, the filaments apically distinct. Style long, exsert, slender, scarcely capitate. Achene angulate.

Chilian herbs.

1. Gamocarpha ameghinoi Speg. (olim sub *Boopis*).

Glabrous, fleshy; the branches prostrate, short, rosulate-leafy. *Leaves* suborbicular, incised-toothed, long and broad-petiolate. *Scapes* thick, short-bracteate, with apical *flower-head*, but *no involucre*. *Flowers* rather long, greenish, glomerate at the axils of the upper bracts.

S. Patagon., mountains at Karr Aike near Lago Argentino.

2. G. caleofuensis Speg.

Low, erect, simple or few-branched, glabrous, green. *Leaves* crowded, erect, appressed, thickish, spatulate, apically trifid, with short obtuse lobes; margin thick, subrevolute; basally attenuate to a flat petiole 3–4 times as long as the limb. *Scapes* sparsely leafy, 1-headed. *Involucre* formed of short-stalked leaves; *pales* like the leaves, but shorter, concrescent at their base. *Flowers* numerous, crowded; *ovary* turbinate, glabrous; *corolla* subcylindrical, 5-toothed, whitish. *Stamens* inserted at base of tube; *style* long, exsert.

Chubut, in rocks at base of Carren-leofú springs.

3. G. patagonica Speg.

Stoloniferous perennial. *Leaves* oblanceolate-linear, long-attenuate-petiolate, coarsely and obtusely toothed, teeth 1–3-jugous, rather fleshy, green. *Scapes* erect, having 2 opposite branches of their own length, all 1–3-leaved, 1-headed. *Involucre* 6–10-partite; the segments broad-linear, obtuse, entire, scarcely equalling the funnelform flowers. *Corollas* white-greenish, 5-parted to the staminal insertion.

Chubut, mountains near Bolson.

4. G. subandina Speg.

Cespitose-pulvinate perennial, glabrous, green. *Leaves* crowded at the top of branches of the rhizome, subrosulately imbricated, thick, coriaceous, shining; their limbs obovate, involutely complicate, pinnatifid, the lobes 2–3 pairs, short, obtuse, subimbricate-connivent, cuneate-attenuate downwards to a trigonal petiole, 3–8 times longer. *Scapes* none. *Heads* hemispherical, compound, many-flowered, sessile in the center of the rosules. *Bracts* 3–5-cleft, concrescent. *Flowers* greenish. *Ovaries* angulate, subconcrescent, apically truncate, 5-toothed, the teeth lanceolate. *Corollas* obconical-cylindraceous, shortly 5-toothed. *Stamens* inserted at base of the tube. *Style* filiform, exsert.

Chubut, in mountains by Carren-leofú. Allied to *G. caleofuensis.*

3. NASTANTHUS Miers. (In Eng. & Prantl, sub *Boopis.*)

Stemless herb, with short, thick, 1-headed scape. Leaves rosulate, thickish, dentate or pinnatifid. Pales of receptacle few, slender. Corollas slender at base. Achenes angulate-subulate, as in *Boopis anthemoides*, but crowned by the very obtuse calyx-lobes.

1. N. CHUBUTENSIS Speg.

Green, glabrous, fleshy perennial. *Leaves* subfasciculate at the crown of the root; erect, with oblanceolate or obovate limb, crenate, dentate, produced to a petiole 2–4 times as long. *Scapes* numerous, terete, slender, the marginal free and scarcely exceeding the leaves; the central often shorter than the concrescent leaves. *Heads* globose, almost without *pales*, with a 5–7-leaved *involucre;* lobes narrowly ovate or sublanceolate, acute, entire. *Flowers* numerous; *corollas* funnel-filiform, 5-cleft; *stamens* inserted at the throat of the corolla-tube. *Achenes* broadly pentagonal-winged; *calyx-lobes* broad, obtuse.

Chubut, in dry, rocky places near Carren-leofú.

2. N. PATAGONICUS Speg.

Glabrous, rather small perennial. *Leaves* densely and imbricately rosulate at the crown of the root; limbs broad-obovate, incised-dentate, teeth acute, often callously mucronate, attenuate to a longer petiole. *Heads* mostly dimorphous, a very large central head on a thick, naked scape, and nearly always several lateral, smaller, subsessile heads, with involucres 8–20-lobed; the lobes ovate, acute, entire. *Receptacle* naked or scarcely fimbrilliferous. *Flowers* numerous, narrowly obconoid-cylindraceous, greenish, 5-merous; *corolla-lobes* long-acute; *staminal* insertion in the mouth. *Style* exsert, slender.

Chubut, rarely in dry, stony places near Teka-choique.

4. ACICARPHA Juss.

Usually branching annuals, with *flowers dimorphous* in a head, the marginal fertile, the central sterile. *Involucral* bracts connate below with the receptacle, free and leafy upwards. *Receptacle* long, with few or no pales. *Filaments* connate. *Achenes* united and immersed in the receptacle, crowned by the hard, accrescent-spinescent *calyx-lobes.*

Species 3, in extratrop. S. Amer.

(Fig. in Eng. & Prantl, iv, 5, p. 85.)

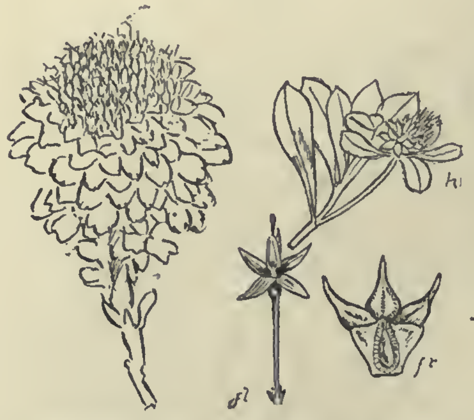
1. A. ROSULATA N. E. Brown.

Nearly *stemless* herb. *Leaves* many, densely rosulate, coriaceous, spatulate, 12 by 6 mm., entire or 3-toothed, obtuse, cuneate-narrowed to the petioles. *Heads* numerous, sessile in the axils of palmatisect bracts, densely crowded. *Involucral bracts* connate to a many-toothed cup. Stamens 5, the anthers united. *Ovary* glabrous. Achenes?

Remarkable for its dwarf habit and rosulate leaves. (Fig. 96.)

S. Patagon., at Cerro Toro. (Nordenskjold.)

FIG. 96.



Acicarpha.—On left a scape and head of *A. rosulata* (original); *h*, leaf-shoot and head, and *fl*, *fr*, flower and fruit of *A. spathulata* (after Hock).

2. A. TRIBULOIDES Juss.

Glabrous, erect. *Leaves* oblong-cuneate, sinuate, dentate, obtuse, the lower spatulate, the upper amplexicaul, with a broad base. *Flower-heads* terminal on the branches. *Style* long-exserted.

(Bonaria); N. Patagon., by Rio Negro.

Family 113. COMPOSITÆ. Composite Family.

Herbs or woody plants, with *exstipulate*, simple *leaves* (often much divided), and *involucrate-heads* of mostly 5-merous, sympetalous *flowers*, with synantherous, epipetalous *stamens*, and an inferior, 1-celled, 1-ovulate *ovary*, having a 2-branched *style*, and mostly crowned by a *pappus* consisting of bristles, awns, or scales, being the limb of the adnate *calyx;* pappus sometimes none. Common *receptacle* of the flower-head, flat or variously convex, naked or with chaff between the flowers. *Seeds* with large, anatropous, erect embryo, and no *endosperm*.

Species nearly 12,000, cosmopolitan.

(Always secure open flower-heads and also ripe fruits. In the analyses, references to the style-branches in most cases concern only fertile flowers; the style of sterile flowers being imperfectly developed.)

PATAGONIAN COMPOSITÆ.

I. ANALYSIS OF TRIBES.

A. Flowers tubular, with or without a ray of ligulate flowers. Juice watery.

  B. Heads homogamous, all the flowers tubular.

    c. Anthers basally sagittate, dorsifixed. Flowers never yellow. (Genus 1.) I. VERNONIEÆ, p. 766.

    c2. Anthers basally subentire, apically appendaged or not. Styles long, obtuse. Involucral-scales ∞-seriate, imbricate, only slightly unequal. Receptacle mostly naked. Pappus mostly setose. Corollas 4–5-cleft, never true yellow. Leaves mostly opposite. (Genera 2–4.) II. EUPATORIEÆ, p. 766.

    c3. Anthers long-tailed, and apically long appendaged. Styles short, obtuse. Involucral-scales ∞-seriate, imbricate, and often spinescent. Receptacle with setæ or with cleft pales. Pappus setose or narrowly paleaceous, mostly ∞-seriate. Corollas all 5-merous. Leaves alternate, often spinose. (Genera 57–60.) X. CYNAROIDEÆ, p. 771.

  B2. Heads heterogamous, radiate, or abortively homogamous and discoid.

    c. Anthers basi-obtuse, apically appendaged.

      d. Receptacle mostly naked.

        e. Involucral scales imbricated.

          f. Style-branches flat. Pappus setaceous, rarely poleaceous or none. Leaves mostly alternate, rarely dissected. (Genera 5–21.) III. ASTEREÆ, p. 766.

          f2. Style-branches truncate or hairy-tipped. Involucral scales 1–2-seriate, mostly herbaceous, subequal, rarely 3-seriate, with short outer scales. Pappus mostly paleaceous or awned. Leaves opposite or alternate. Ray-flowers pistillate, fertile or neuter; in ours not persisting on the fruit, rarely none. (Genera 42–47.) VI. HELENIOIDEÆ, p. 769.

        e2. Involucral scales 1–2-seriate, subequal, little imbricated, sometimes with a calyculus, rarely ∞-seriate. Receptacle mostly naked. Styles pencilled, truncate or appendaged. Hermaphrodite flowers usually fertile. Pappus setose, rarely none. Leaves mostly alternate. Flowers, especially of ray, usually all fertile. (Genera 53–55.) VIII. SENECIONEÆ, p. 770.

      d2. Receptacle with chaff subtending the flowers. Involucral-scales 1–∞-seriate, mostly herbaceous. Style-branches truncate or appendaged. Pappus awn-like, or paleaceous, or none. Leaves, at least the lower, often opposite. Disk mostly yellow, and ray mostly homochromous. (Genera 33–41.) V. HELIANTHOIDEÆ, p. 768.

*d*3. Receptacle chaffy or naked. Involucral-scales 2–∞-seriate, imbricate, dry, or apically scarious. Style-branches mostly truncate. Pappus none, or coroniform or shortly paleaceous. Leaves alternate, mostly dissected. (Genera 48–52.) VII. ANTHEMIDEÆ, p. 770.

[*c*. Anthers basally entire, or sagittate, not tailed. (S. Afr. and Austral.) X. ARCTOTIDEÆ.]

*c*2. Anthers basally mucronate, subcaudate. Involucral scales 1–2-seriate, subequal (rarely 2–3-seriate, unequal). Style-branches flat-truncate. Receptacle usually naked. Pappus none or woolly, or fugacious from the large achenes. Leaves mostly alternate, rarely dissected. Disk mostly yellow or orange, ray homochromous or white. (Genus 56.) IX. CALENDULEÆ, p. 771.

*c*3. Anthers tailed. Style-branches apically rounded or truncate, not appendaged. Pappus mostly setose, sometimes paleaceous or none.

d. Flowers often ligulate in the ray, tubular and shortly 4–5-merous in the disk. Heads often small and rays none. Anthers apically appendaged. Involucral scales mostly ∞-seriate, scarious or herbaceous. Receptacle sometimes paleaceous. Leaves mostly alternate and entire. (Genera 22–32.) IV. INULEÆ, p. 768.

*d*2. Flowers bilabiate (outer lip 3-, inner 2-merous, both revolute) or deeply 5-cleft, often ligulate in the ray. Involucral-bracts ∞-seriate, imbricate (rarely 1–2-seriate). Receptacle mostly naked. Leaves mostly alternate, sometimes spinescent, rarely dissected. (Genera 61–79.) XII. MUTISIEÆ, p. 771.

*A*2. Flowers all ligulate, the ligules 5-toothed. Plants with milky juice. Anthers mostly tailed and apically appendaged. Involucral-scales 1–2–few-seriate, or calyculate. Leaves alternate or basal. (Genera 80–84.) XIII. CICHORIEÆ, p. 772.

II. KEY TO THE GENERA.

Tribe I. *Vernonieæ*. (Genus 1.) *Vernonia*, p. 773.

Tribe II. *Eupatorieæ*. (Genera 2–4), p. 773.

A. Pappus of 2–many pales or awns. Involucral scales 5–6. Anthers appendaged. Achenes with 3–5 ribs. Heads with 5 (or 3–4) flowers. 2. *Stevia*, p. 773.

*A*2. Pappus of many bristles, rough, not flexuose, persisting.

b. Involucral scales 6–many. Pappus bristles free or forming a basal ring. Heads mostly many-flowered. 3. *Eupatorium*, p. 774.

*b*2. Involucral scales 4, sometimes with short, outer scales. Heads 4-flowered. Mostly winding herbs or shrubs. 4. *Willugbæa* (*Mikania*), p. 777.

Tribe III. *Astereæ*. (Genera 5–21), p. 778.

A. Heads usually with ligulate homochromous rays.

b. Pappus of 2–8 deciduous awns or small scales. Ray-flowers female, ligulate, or none. 5. *Grindelia*, p. 778.

*b*2. Pappus mostly of scales (short and with a long awn, or long and narrow), or a short crown, or obsolete. Heads panicled or corymbed or terminating the branches. Involucre long-campanulate, its scales membranous, not dry on edges, few seriate. 6. *Gutierrezia*, p. 779.

*b*3. Pappus of many simple setæ. Hermaphrodite flowers fertile (save sometimes the innermost). Receptacle without chaff.

  c. Pappus double, the outer of minute bristles or scales. Ray 1-seriate. Achenes compressed. Style appendages short and broad. Heads terminal on leafy branches. 7. *Hysterionica*, p. 781.

  *c*2. Pappus-bristles 1–several-seriate, equal or unequal, but with no distinct outer row.

    d. Heads heterogamous. No pales on the receptacle.

      e. Heads solitary sessile on ends of densely leafy branches and rather small. Female corollas short ligulate. 8. *Lepidophyllum*, p. 782.

      *e*2. Heads in a compound infloresence or solitary on ends of the branches.

        f. Pappus-setæ 1–2-seriate, subequal. 10. *Solidago*, p. 784.

        *f*2. Pappus-setæ 1–3-seriate, unequal. Involucre several-seriate, hemispherical or broad-campanulate. Flowers yellow. 11. *Haplopappus*, p. 785.

    *d*2. Heads homogamous. Style-appendages not turbinate. Corollas all actinomorphic. Heads sessile on ends of dense, leafy branches. 9. *Nardophyllum*, p. 783.

    *d*3. Heads with ligulate rays, setose pappus and paleaceous receptacle. 12. *Chiliophyllum*, p. 787.

*A*2. Heads with ligulate, usually heterochromous rays.

  b. Pappus short or none. Receptacle without chaff. Involucre broad. Heads many-flowered. Achenes 4-ribbed, more or less compressed, or only with a thick border; attenuate above. Cespitose herbs with solitary, pedicled heads. 13. *Lagenophora*, p. 788.

  *b*2. Pappus setose, usually copious (or occasionally with some outer scales).

    c. Herbs with leafy stems (or with radical leaves and scape-like stems, but then not silky), not woolly. Achenes not attenuate upwards nor rostrate; compressed. Pappus-setæ subequal.

      d. Style-branches with short triangular to lanceolate appendages. Annuals with racemose or panicled heads, or heads solitary and terminating the branches; or perennials.

        e. Involucre more than 2-seriate. Ligules usually 1-seriate, and mostly long. Pappus-setæ 2–3-seriate. Style-appendages lanceolate. 14. *Aster*, p. 789.

        *e*2. Involucre 2-seriate. Ligules narrow-linear, mostly several-seriate. Style-appendages mostly short-triangular. 15. *Erigeron*, p. 790.

      *d*2. Style-branches with linear-sagittate appendages. Ray-flowers several-seriate. Pappus 2-seriate. Perennials with thick rootstock. 16. *Vittadinia*, p. 797.

    *c*2. Shrubs or half-shrubs. Receptacle with chaff. Achenes 5-ribbed. Pappus-setæ 2–3-seriate, unequal. Shrubs. 17. *Chiliotrichium*, p. 797.

*A*3. Heads with filiform or short, ligulate female ray-flowers, in 2–several series; heads rarely discoid. Pappus setose.

  b. Heads heterogamous. Achenes compressed. Pappus 2–several-seriate, long. Involucral scales not leafy nor herbaceous. Ligules none or shorter than the styles. 18. *Conyza*, p. 798.

  *b*2. Heads homogamous, discoid, flowers all hermaphrodite. Shrubs with nondecurrent leaves. 19. *Chrysocoma*, p. 799.

*A*4. Heads diœcious or polygamo-diœcious.
- *b*. Receptacle of female flowers with large pales. 20. *Heterothalamus*, p. 800.
- *b*2. Receptacle without pales. Diœcious. 21. *Baccharis*, p. 801.

Tribe IV. *Inuleæ*. (Genera 22–32), p. 810.

A. Female flowers filiform.
- *b*. Receptacle naked.
  - *c*. Styles of the hermaphrodite flowers with filiform, pointed branches, having collecting hairs. Heads solitary or crowded, but not glomerulate. Achenes small, pappus of many slender setæ. Shrubs or half-shrubs, with leafy stems and broad, involucrate bracts.
    - *d*. Involucrate bracts membranous or leathery. Hermaphrodite flowers numerous. 22. *Pluchea*, p. 810.
    - *d*2. Involucrate bracts dry, coriaceous, mostly recurved. Hermaphrodite flowers rather few (1–10). 23. *Tessaria*, p. 810.
  - *c*2. Styles of the hermaphrodite flowers mostly truncate, and only with a terminal ring of hairs; stigmas as marginal lines. Style in sterile flowers obtuse, clavate or capitate. Heads heterogamous or abortively diœcious.
    - *d*. Achenes rostrate. All the flowers with a pappus. 26. *Chevreulia*, p. 811.
    - *d*2. Achenes not rostrate.
      - *e*. Hermaphrodite flowers all unfruitful, with undivided or lobed style. Diœcious herbs, with alternate leaves, and many-flowered heads having numerous involucral scales. 27. *Antennaria*, p. 812.
      - *e*2. Hermaphrodite flowers equally or mostly fertile.
        - *f*. Pappus-setæ plumose, on a basal ring. Style branches not truncate. Annual herbs, branching below. 28. *Facelis*, p. 813.
        - *f*2. Pappus setæ not plumose.
          - *g*. Heads small, few-flowered (3–6 female, and 1–2 hermaphrodite). 29. *Achyrocline*, p. 813.
          - *g*2. Heads many-flowered, rather small, cylindrical. 30. *Lucilia*, p. 814.
          - *g*3. Heads many-flowered, hemispherical, or ovoid or campanulate. Female flowers 2–several-seriate. Head only exceptionally solitary, mostly glomerulate. 31. *Gnaphalium*, p. 814.
- *b*2. Receptacle paleaceous before all or at least the female flowers. Mostly woolly herbs, with entire or toothed leaves, and small, not ribbed, achenes.
  - *c*. Chaff enclosing the female flowers, with corolla terminal on the achenes. Pappus none, at least in the female flowers. 24. *Psilocarphus*, p. 811.
  - *c*2. Female flowers only 1–2-seriate, enclosed in chaff. Pappus a toothed or jagged crown. 25. *Micropsis*, p. 811.

*A*2. Female flowers ligulate. Style-branches obtuse. Receptacle without chaff. Disk-flowers sterile. Pappus none or a small ring. Stigmas marginal, apically coalescing. 32. *Adenocaulon*, p. 819.

Tribe V. *Helianthoideæ*. (Genera 33–41), p. 820.

A. Receptacle chaffy throughout.
- *b*. Corolla of female flowers none or very small. Heads monœcious.

c. Involucral scales of hermaphrodite (male) heads connate, forming 1 series of spines or tubercles. 34. *Ambrosia*, p. 820.

c2. Involucral scales of hermaphrodite (male) heads free. 35. *Xanthium*, p. 821.

b2. Corolla of female flowers none or normal. Heads hermaphrodite, homogamous or heterogamous. Rays none, or withering, or deciduous before ripening of the fruit.

c. Disk-flowers sterile. Achenes dorsally compressed, surrounded by an inner involucral scale, and by 2(–3) neighboring pales, which enclose the hermaphrodite flowers. Corolla very short. Head erect. Fruits naked or nearly so, their ribs united with the pales. 33. *Parthenium*, p. 820.

c2. Disk-flowers fertile. Pappus of retrorsely rough bristles.

d. Achenes not, or laterally, compressed. Inner involucral scales plane.

e. Pales very small. Pappus none or 2 short awns. Marginal flowers small, more or less 2-seriate. Ligules entire or 2-toothed.
36. *Eclipta*, p. 822.

e2. Pales broad, arched or complicate, more or less enclosing the hermaphrodite flowers, but not the ripe achenes.

f. Fruit of hermaphrodite flowers, thick, 4–5-angled, or somewhat dorsally compressed (of the marginal female flowers, often 3-angled or dorsally compressed). Involucral scales exceeding 4, free, mostly subsimilar. Pappus-scales basally united or free, with or without 1–5 small awns. Achenes obscurely or obtusely 4-angled. Herbs or shrubs with opposite leaves. 37. *Wedelia*, p. 822.

f2. Fruit of disk-flowers flat-compressed, with acute or winged angles, unstalked. Heads many- (20 +) flowered. Pappus of 2 awns, with no intermediate scales.

g. Ripe achenes not winged. Ray-flowers female or none. Receptacle conical. Herbs with opposite leaves and solitary erect heads.
38. *Spilanthes*, p. 823.

g2. Ripe achenes winged from the base, not diverging from each other. Mostly herbs, with leaves often decurrent.
39. *Verbesina*, p. 823.

d2. Achenes more or less laterally compressed. Inner involucral scales connate, at least half way. Heads stalked or rarely numerous and sessile. Style-appendages of the hermaphrodite flowers none or short. Achenes similar, or the marginal reduced. Smooth undershrubs; lower leaves opposite.
40. *Thelesperma*, p. 824.

A2. Receptacle centrally without chaff, with 1-seriate pales subtending the outer hermaphrodite flowers. Achenes of female flowers laterally compressed (rarely no ray flowers). Herbs mostly with alternate, entire leaves. 41. *Madia*, p. 824.

Tribe VI. *Helenioideæ*. (Genera 42–47), p. 825.

A. Plant without oil-glands. Hermaphrodite flowers fertile. Achenes not flat-compressed, or at least with lateral nerves.

b. Receptacle flat or convex, rarely hemispherical.

c. Pappus none.

d. Head 1–15-flowered. Achenes long-linear, 8–10-ribbed. 42. *Flaveria*, p. 825.

d2. Head many-flowered. Achenes linear and few-ribbed, prismatic or obpyramidal, triangular, the marginal sometimes winged. Rays ligulate. Involucral scales free. 43. *Villanova*, p. 825.

c2. Pappus of free scales, obtuse or acute or pointed. Involucral scales herbaceous, erect, not enclosing the marginal achenes. Female corollas ligulate or none. Style-branches of hermaphrodite flowers rounded or truncate. Achenes obpyramidal. 44. *Actinella*, p. 826.

b2. Receptacle convex, with stiff setæ between the flowers. Pappus of 5–10 hyaline scales, terminating in awns. 45. *Gaillardia*, p. 826.

A2. Plants with large oil-glands in the leaves and involucres. Herbs.

b. Pappus of 3–6 very unequal scales. Heads often discoid. 46. *Tagetes*, p. 827.

b2. Pappus of 10 to many scales, often similar, or partly similar. Heads distinct; female flowers none or ligulate. 47. *Dysodia*, p. 828.

Tribe VII. *Anthemideæ.* (Genera 48–52), p. 828.

A. Receptacle chaffy. Disk flowers fertile; achenes not woolly; corolla not persisting. Style-branches truncate, not appendaged. Herbs, with leaves alternate, often much parted.

b. Achenes not or only slightly compressed. Head heterogamous, or homogamous, and then with pappus none or 1-sided, like an auricle. Corolla-tube compressed, winged, tubercled or spurred. Heads on terminal peduncles. 48. *Anthemis*, p. 828.

b2. Achenes much compressed, not winged. Pappus none. Heads mostly rather small and corymbed. 49. *Achillea*, p. 829.

A2. Receptacle without chaff. Heads heterogamous, disciform. Corolla of female flowers tubular or none. Style-branches of hermaphrodite flowers penicillate, even when unfruitful.

b. Hermaphrodite flowers 4-merous. Involucre simple, its scales 1–2-, rarely 3-seriate, subequal.

c. Head pediceled at end of the branches. 50. *Cotula*, p. 829.

c2. Heads solitary, sessile, or in dense corymbs. Female flowers in 1 series. 51. *Abrotanella*, p. 831.

b2. Hermaphrodite flowers 5-merous. Female flowers in 1 series. Involucral bracts few-seriate, scarious margined, the outer gradually smaller. Heads small, usually crowded but not corymbed. 52. *Artemisia*, p. 832.

Tribe VIII. *Senecioneæ.* (Genera 53–55), p. 832.

1. Heads with female ray-flowers, whose corollas are tubular, or filiform, or irregularly 4–5-lobed. Leaves small, entire, closely compressed. Branches all leafy; heads sessile in the upper leaves as an extra involucre. Proper involucre 1–2-seriate, with black-tipped scales. Achenes glabrous. Low, cespitose herb. 53. *Melalema*, p. 832.

2. Heads homogamous. Involucre 3–several-seriate. Pappus hairy. Achenes glabrous. Unbranched or slightly branched herbs, with radical and alternately cauline leaves. 54. *Culcitium*, p. 833.

3. Heads homogamous, or with ligulate (or rarly bilabiate), female ray-flowers. Pappus hairy (rarely of short scales). Involucre 1–2-, rarely 3-seriate, its scale not overlapping and not appendaged; the outer often as a calyculus. Receptacle flat. Achenes prismatic or cylindrical or ribbed. The hermaphrodite or all the flowers usually yellow.
55. *Senecio*, p. 833.

Tribe IX. *Calenduleæ.* (Genus 56), p. 861.

Small, prostrate herb. Heads small, axillary. Corolla and achenes woolly.
56. *Eriachænium*, p. 861.

Tribe X. *Cynaroideæ.* (Genera 57–60), p. 861.

A. Fruit with basal attachment-scar, smooth, apically bordered. Receptacle setiferous. Filaments free, warty, hairy or plumose. Pappus of rough or plumose bristles.
  b. Receptacle not fleshy. Pappus bristles not plumose. Leaves and involucral scales usually spiniferous.
    c. Filaments distinct. 57. *Carduus*, p. 861.
    c2. Filaments united half way. 58. *Silybum*, p. 861.
  b2. Receptacle fleshy. Pappus bristles plumose, inserted on an annulus. Heads large, solitary on ends of branches. Foliage often spinose-tipped. 59. *Cynara*, p. 862.
A2. Fruit with lateral, oblique scar. Involucre of spinose leaves. Pappus simple, consisting of setæ or scales or none. 60. *Carthamus*, p. 862.

Tribe XI. *Mutisieæ.* (Genera 61–79), p. 863.

A. Corollas of the hermaphrodite flowers cyclic. Styles without distinct collecting hairs. Heads on the ends of the branches.
  b. Heads rayless. Receptacle naked or with short hairs.
    c. Pappus plumose.
      d. Corolla-tube hairy inside. Shrubs. 61. *Chuquiraga*, p. 863.
      d2. Corolla-tube smooth inside. Herbs. Heads rather large, sessile amid the leaves.
62. *Doniophyton*, p. 865.
    c2. Pappus of simple rough setæ. Flowers all hermaphrodite. Leaves entire or nearly so. Achenes papillate or hairy, rather small.
      d. Style 2-toothed, afterwards more deeply parted, with long-approximate branches. Trees or shrubs, leaves not spinose, and heads usually several, sessile. Involucral scales pointed or pungent. 64. *Gochnatia*, p. 866.
      d2. Style 2-forked. Shrubs with solitary, sessile heads or shortly pedicled. Leaves small, entire. Involucral scales very obtuse. 66. *Cyclolepis*, p. 867.
    c3. Pappus of 10 pales. Style-branches short. Heads sessile, solitary.
63. *Dusenia*, p. 866.
  b2. Heads with bilabiate or ligulate rays, homogamous. Corollas of disk-flowers with revolute lobes. Involucral scales without dry margin. Anther-tails (often long and thick) ciliated. Pappus setæ several-seriate. Shrubs with crowded, entire leaves.
67. *Plazia*, p. 868.
A2. Corollas of the hermaphrodite flowers bilabiate.
  b. Collecting hairs of their styles none or not in a terminal circle. Anthers tailed. Upper-lip of corolla 1–2-merous; under-lip 4–3-merous. (MUSTISINÆ.)

c. Stem leafy; with many flower-heads. Shrubs.

d. Heads few-flowered (3–5), homogamous, terminal or along branches. Pappus-setæ several-seriate. Sometimes spinescent. 68. *Proustia*, p. 868.

d2. Heads mid-sized, 20–30-flowered, terminal, sessile. Involucre campanulate. Pappus-setæ 1-seriate. Achenes ribbed, tubercled. Cespitose, with linear leaves. 65. *Lavidia*, p. 867.

d. Heads many-flowered, heterogamous. Marginal flowers radiate.

e. Pappus-setæ plumose, 1-seriate. Involucre ovoid-campanulate or oblong, its inner scales shorter than the rays. 69. *Mutisia*, p. 869.

e2. Pappus-setæ rough, not plumose, several-seriate. Involucre campanulate. Heads terminal on the branches, pediceled. 70. *Brachyclados*, p. 872.

c2. Stem unbranched, bearing 1 flower-head. Herbs mostly with basal leaves.

d. Heads radiate, heterogamous, rarely homogamous. Pappus-setæ not plumose.

e. Marginal flowers 1-seriate, with many-nerved corolla. 71. *Trichocline*, p. 873.

e2. Marginal flowers 2–3-seriate, ligulate, with no under lip. 72. *Chaptalia*, p. 874.

d2. Heads with flowers all similar, homogamous. Pappus-setæ long-plumose. 73. *Macrachænium*, p. 874.

b2. Collecting hairs of the styles of the hermaphrodite flowers forming a terminal circle. (NASSAUVINÆ).

c. Heads 4–5-flowered, sessile, united into a globular or ovoid glomerulus or a leafy spike; rarely solitary and sessile between the leaves. Leaves close, mostly up to the inflorescence, sometimes less. Flowers yellow or whitish.

d. Pappus present. 74. *Nassauvia*, p. 875.

d2. As *Nassauvia*, herbs, heads mostly in terminal glomerules, inner involucral scales erect. 75. *Triptilion*, p. 885.

d3. No pappus. 76. *Strongylomopsis*, p. 886.

c2. Heads many-flowered; rarely only 5–9-flowered, and then pediceled, corymbed or panicled. Receptacle without chaff, or with a few pales before the marginal flowers.

d. Pappus long-plumose, or shortly ciliate and 1-seriate. Herbs, more or less woolly, with long-stalked, panicled or distinct heads. 78. *Lasiorrhiza* (*Leuceria*), p. 887.

d2. Pappus of simple setæ, several-seriate. Involucre 2–many-seriate. Mostly herbs; flowers not yellow. 79. *Perezia*, p. 892.

d3. Pappus of denticulate setæ, 1-seriate. Involucre 1-seriate, with a few smaller outer scales. Small shrub, with toothed or lobed, spinulose leaves. 77. *Ameghinoa*, p. 886.

Tribe XII. *Cichorieæ.* (Genera 80–84), p. 896.

A. Pappus-setæ plumose, sometimes broadened at base; in the margin sometimes only a crown of short scales. Receptacle chaffy. Usually stemless herbs. (LEONTODONTINÆ.)

b. Involucral-scales scarcely with a dry border. Achenes usually rostrate. Pappus all, or of the inner fruits, of 10–20 plumose setæ, with or without shorter simple setæ. 80. *Hypochæris*, p. 896.

A2. Pappus-setæ rough or capillary. Receptacle without chaff. Fruits all similar. (CREPIDINÆ.)

b. Inner or all the achenes rostrate; mostly herbs, with 1-several series of processes or scales at base of the rostrum. Heads many-flowered; fruits conically broadening at the base. Rostrum long, supporting the hairy, disciform pappus. Involucral-bracts 1-seriate, with a distinct calyculus. 81. *Taraxacum*, p. 900.

b2. Achenes not rostrate, or without processes at base of the rostrum.

c. Fruits compressed, 10–20-ribbed, truncate or at least not rostrate. Pappus-setæ many seriate, of unequal hairs. Herbs or half-shrubs. 82. *Sonchus*, p. 901.

c2. Fruits cylindrical or prismatic; not compressed; narrowing basewards. Pappus-setæ persisting.

d. Fruits apically narrowing or even rostrate. Involucral scales 2–several-seriate, or with a calyculus. Stem scapiform, 1-headed. 83. *Agoseris* (*Troximon, Macrorhynchus*), p. 902.

d2. Fruits apically broad, truncate, with distinct ribs. Flowers mostly yellow (or reddish, rarely white). Hairs of 2 kinds, glanduliferous and stellate. 84. *Hieracium*, p. 903.

1. VERNONIA Schreb. Ironweed.

Heads having *all the flowers* tubular and alike, no ray. *Involucre* shorter than the flowers, of many imbricated series. *Receptacle* naked. *Achenes* cylindrical and ribbed. *Pappus* double, outer of minute scales, inner of capillary bristles. Perennial herbs, with alternate leaves and purple, corymbose *flowers*.

Species 450, headquarters in Amer., United States to Argentina; also Africa, Madagascar and Asia.

V. NITIDULA Less. (*Baccharis montevidensis* Griseb.)

Stem fruticose, terete, much branching, glabrous. *Branches* angulate. *Leaves* sessile, coriaceous, oblong, 1–rarely-penni-nerved, revolute, entire or denticulate on margins, both surfaces glabrous and glandular. *Cymes* subpanicled on ends of the branches. *Heads* pediceled, 7–8-flowered. *Involucre* turbinate, its scales oblong, subacute, appressed. *Achenes* hairy.

(Brazil); N. Patagon., by Rio Negro, near Carmen.

2. STEVIA Cav.

Herbs or undershrubs, with all, or usually at least the lower, *leaves* opposite, and with narrow, white or purplish *heads*, which are homogamously 5-flowered. *Involucre* cylindrical, of 5–6 narrow, subequal bracts. *Anthers* apically appendaged, basally obtuse. *Style-branches* long, slender, obtuse. *Achenes* linear-compressed, 4–5-angled. *Pappus* of 5–10 pales or awns, often differing in the same head, or very small.

(Fig. in Eng. & Prantl, iv, 5, p. 134, L–O.)

Species nearly 100, in trop. Amer.; numerous in Central Amer.; also in Argentina.

1. STEVIA MULTIARISTATA Spreng.

Glandular-pubescent herb. *Leaves* alternate, linear-canaliculate, subentire, hoary underneath. *Peduncles* subracemose, 1-headed. *Pappus* of many awns, exceeding the corolla.

(Montevideo); N. Patagon., by Rio Negro.

2. S. SATUREIÆFOLIA Sch. Bip. (DC. sub *Nothites.*)

Erect undershrub, pubescent. *Leaves* nearly opposite, sessile, linear, entire, obsoletely woolly, 25 mm. by 3 mm. *Corymbs* terminal.

(Montevideo); Brazil to Isla Verde south of Bahia Blanca.

S. SATUREIÆFOLIA PATAGONICA Hieron.

Leaves less densely puberulous. *Dichasium* corymbose, densely crowded at the ends of the branches. *Involucre* longer (8–9 mm.). *Pappus* setæ purplish above.

(Argentina); N. Patagon., by Rio Negro, "extending through North Patagonia." (J. Ball.)

S. SATUREIÆFOLIA ANGUSTIFOLIA Baker.

Leaves 25 mm. long, by 2–3 mm. wide.

N. Patagon. (?).

3. EUPATORIUM Linn.

Herbs or shrubs, mostly with *opposite*, entire or toothed *leaves*, and purplish to white, mostly midsized, homogamous heads of 1–100 (mostly numerous) flowers. *Involucral bracts* many-seriate, slightly unequal, always more than 5. *Receptacle* naked. *Corollas* narrow, their limb not greatly enlarged. *Anthers* apically appendaged, basally obtuse. Style-branches long, obtuse. *Pappus* 1-seriate, of many, slender or stiffish, smooth to barbellate bristles. *Achenes* truncate, 5-angled.

(Fig. in Eng. & Prantl, iv, 5, p. 139, A.)

Species 400, American, especially tropical. Few in Eurasia and trop. Africa.

Key to the Species.

- *A*. Leaves pinnately divided.
    - *b*. Twice or thrice pinnatipartite, segments oblong to lanceolate; upper leaves simpler with linear lobes. Heads small and panicled. Plant hairy. *pinnatifidum.*
    - *b2*. Twice pinnately divided. Corymbs crowded. Stem and leaves hispid. *erodiifolium.*
    - *b3*. Lower leaves once–twice pinnatifid, the lobes linear and spinulose. Racemes panicled; heads nodding. Achenes rough. *saucechicoënse.*
    - *b4*. Leaves incised-pinnatifid. Heads glomerate on opposite branches, or solitary, 6–7-flowered. *patens.*
- A2. Leaves subhastate, serrate, sessile, alternate and opposite, scabrous-hairy. Corymbs dense. *subhastatum.*
- *A3*. Leaves oblong to subovate.
    - *b*. Densely pubescent, oblong or oval, incised, attenuate-petiolate. Stems nearly leafless above. *bacleanum.*
    - *b2*. Leaves rough, subovate, acuminate, 3-nerved, serrate to crenate. Head large. Achenes shining. *macrocephalum.*
    - *b3*. Hairy-tomentose. Leaves ovate-lanceolate, 3-nerved, toothed, petiolate. Panicles few-headed. Achenes hirsute. *patagonicum.*

1. EUPATORIUM BACLEANUM DC.

Suffruticose, with short, dense pubescence; and terete *stems* nearly leafless at the top. *Leaves* opposite, some alternate, narrowing-petiolate, oblong or oval, toothed or incised. *Panicles* subcorymbose, with alternate branches. *Heads* pediceled, 16–20-flowered. *Involucre-bracts* 2–3-seriate, lax-imbricate, linear-oblong, obtuse, their apex membranaceous, subciliate. *Pappus* sordid. *Achenes* angled, villous.

(S. Brazil); N. Patagon., near Rio Negro.

2. EU. ERODIIFOLIUM DC.

Herbaceous (?). *Stem* erect, terete, leafy and *hispid* below, naked and hairy above. *Leaves* opposite, *hispid* on the back and margin, long-attenuate to a petiole, pinnately parted upwards, with pinnatifid lobes, the lobules oblong-linear, subacute. *Corymbs* terminal, crowded, with alternate branches. *Heads* pediceled, 18–20-flowered. *Involucre-bracts* 2-seriate, a few on the outside small, acute, the inner ones oblong, basistriate, apically submembranaceous, obtuse, puberous.

(S. Brazil); N. Patagon.

Like *E. bacleanum*, except the hispid stem and leaves. "Menueke" (Araucanian); its decoction is used as a sudorific.

3. EUPATORIUM MACROCEPHALUM Less. (*Chromolæna pratensis* Gard.)

Erect herb, with subovate, acuminate, 3-nerved, rough *leaves*, remotely serrate, crenate upwards, and rather large *head* (12 mm. deep and broad) with 3-seriate *involucre*, its scales subequal, acuminate, outside rough. *Corolla-tube* and limb not sharply limited. *Pappus* plumose-serrate. *Achenes* shining.

(Brazil; Argent.); N. Patagon., near Rio Negro. "Differs from *Eupatorium* by having the achene attenuate baseward to a stipe, and the stipe dilated at its base to a ring; also by its cynaroid habit. (Griseb.)

4. EU. PATAGONICUM Klatt.

Stem terete. Branches, petioles and peduncles pubescent-tomentose. *Leaves* opposite, petiolate, ovate-lanceolate, 3-nerved, remotely toothed, with soft, rusty pubescence on both surfaces. *Panicles* few-headed; their branches remote, opposite, about 2–3-headed, the *heads* 6 by 4 mm., pediceled, bracteate, oblong, 9-flowered. Involucral scales imbricate, ovate-lanceolate, acute, 5-ribbed. *Achenes* striate, hirsute.

Patagon., at d'Orbigny.

5. EU. PATENS Hook. & Arn., 1835. (*Mikania tenuiflora* Gris., 1879.)

Suffruticose, much branching. Peduncles and younger *branches* pubescent. *Leaves* opposite, ovate-oblong, rather 3-nerved, incise-pinnatifid. *Heads* glomerate on short, opposite, spreading, leafy branches. *Involucre* oblong, its scales few-seriate, obtuse, substriate.

(Brazil.)

EU. PATENS GRACILIUS (Lor.).

Slender shrub, nearly 2 m. high, supported by other shrubs. *Leaves* smaller than in the type, not membranaceous, rough. *Heads* axillary, solitary on the petioles, or rarely crowded towards the apex, short, pale yellow, 6–7-flowered, or ochroleucous, very fragrant.

N. Patagon, by Rio Negro.

6. EU. PINNATIFIDUM Ell. (*E. virgatum* Don.)

Leaves mainly opposite or in 4's; the lower twice or thrice pinnatipartite, with oblong or lanceolate segments; the upper once or twice pinnate, with linear lobes. *Heads* small, paniculate, 5–9-flowered. *In-*

volucre cylindrical, its scales obtuse, mucronate, imbricate, lax, shorter outwards.

(Eastern U. S.); N. Patagon., by Rio Negro.

7. EUPATORIUM SAUCECHICOËNSE Hier.

Fruticulose, ascending, 35–50 cm. high, and branching, sulcate-striate and leafy to the *panicle*. *Leaves* alternate or subopposite, sessile; the upper linear-entire, spinulose, 20 mm. by 7 mm., the lower once or nearly twice pinnatifid, outline triangular to semicircular, segments 1–3 pairs, linear. *Racemes* subsecund, panicled. *Heads* on 2–3 mm. pedicels, nodding, 5–6-flowered. *Involucre* campanulate, 5 mm. long, with 12 scales in 3–4 series; inner scales acute, rufous upwards; smaller outwards; all scarious, gland-ciliate. *Pappus-setæ* 50. *Achenes* rough, 5-angled.

(From Bahia Blanca northwards); N. Patagon., rare, high up by the Rio Negro. Fragrant; flowers pale lilac to pink.

8. EU. SUBHASTATUM Hook. & Arn., 1835. (*E. bartsiæfolium* DC., 1836.)

Pubescent-scabrous. *Leaves* alternate and opposite, mostly erect, subhastate-lanceolate, and ovate, shortly acuminate, coarsely serrate, sessile below, very rugose and tomentose. *Corymbs* dense, in a many-flowered glomerule. *Involucre* short-cylindrical; its scales ovate, obtuse, striate, with erect, pubescent apex.

(Argentina); N. Patagon. (near Rio Negro).

4. WILLUGBÆA Neck. (1790). (*Mikania* W., 1804.)

Twining herbs (rarely in the tropics, erect shrubs), with opposite, petioled *leaves* and discoid, whitish, 4-flowered *heads*. *Involucre* oblong, of 4 subequal, narrow scales. *Corolla* slender, regular. *Anthers* apically appendaged, basiobtuse. *Style-branches* long, acutish. *Pappus* copious, 1–2-seriate, capillary, rather rough. *Achenes* truncate, 5-angled.

(Fig. in Eng. & Prantl, iv, 5, p. 139, B.)

Species 150, Amer.

1. W. SCANDENS (L.) Ktze. Climbing Hempweed.

Subglabrous, twining over bushes, 2 meters long. *Leaves* ovate to hastate, basicordate, acuminate. *Heads* in compound clusters, ending the branches, white to pink, 6 mm. long.

(N. Amer. and W. I.); N. Patagon., along Rio Negro ("a form with deltoid and obtusely toothed leaves, pubescent above, scabrid below." Speg.).

5. GRINDELIA Willd.

Perennial herbs or undershrubs, with alternate, sessile or amplexicaul *leaves*, usually spinulose-dentate and glutinous above; and large, heterogamous, radiate *heads* of yellow *flowers* terminating the branches. *Anthers* basi-obtuse. *Style-branches* flat, appendaged. *Pappus* of 2–8 awns or bristles, deciduous. Disk-flowers hermaphrodite or male; ray-flowers female, sometimes obsolete, the heads being then discoid and homogamous.

Species 25; some in W. N. Amer., as "gum-plants"; many in South Brazil, Chili, etc.

1. G. BRACHYSTEPHANA Griseb.

Suffruticose, multicauline, all puberulous, the *branches* 1-headed. *Leaves* sessile, lanceolate-acuminate, remotely spinulose serrate (or entire), basi-attenuate, spinescent-tipped. *Involucre* hemispherical, its scales appressed, scarious, ovate or ovate-lanceolate, with a linear-acuminate, squarrose, leafy appendage. *Ray* half as long again as the involucre. *Pappus* of 2–3 setæ.

N. Patagon.; Chubut; S. Patagon., by Rio Chico.

2. G. BRACHYSTEPHANA BERGI Hier.

Climbing. Lower *leaves* narrowed to a petiole as long as the lamina. Pinnæ pinnatifid, spinulose-serrate; upper semiamplexicaul, linear-lanceolate or subcuneate, spinulose-serrate; uppermost entire. Varying greatly.

N. Patagon., by Rio Negro.

3. G. DIFFUSA D. Don (non Hook & Arn.).

Stem with woody base, diffuse, the *branches* terete, glabrous. *Leaves* sessile, subamplexicaul, oblong, deeply serrate, with awned points, glabrous. *Heads* solitary, terminal on the branches, briefly exsert above the upper leaves. *Involucre-scales* lance-linear, appressed. *Pappus-setæ* few, caducous.

N. Patagon.; S. Patagon., at Puerto Deseado.

4. GRINDELIA DISCOIDEA Hook. & Arn.

Glutinous undershrub; with oblong-linear, mucronate, spinulose, dentate *leaves*. *Involucre* hemispherical, squarrose, its external scales linear from an appressed base, recurved. *Ray* none.

(Montevideo), Patagon. (?). "Perhaps a var. of *G. diffusa* (in Puerto Deseado) which has a ray twice the involucre in height."

5. G. PULCHELLA Dunal.

Erect, glabrous undershrub, glutinous upwards, with terete branches, and *leaves* cauline, sessile, oblong, acute, here and there sharply toothed. *Heads* 2–3, proximally bracted. *Involucre* glutinous, its scales lanceolate, acute, appressed. *Pappus* 3-awned.

(Chili); N. Patagon.

6. G. SPECIOSA Lindl. & Paxt.

Short shrub, 1–1.5 meter high, densely branching, sometimes viscid. *Leaves* varying in size, incised or toothed, obtuse or acute, attenuate-petiolate or cuneate, subsessile. Flowering *pedicels* long and leafy or otherwise.

Patagon., by Rio Negro, and Rio Chico de Sta. Cruz.

G. SPECIOSA INTEGRIFOLIA Speg.

Leaves oblanceolate, acute, attenuate-petiolate, entire.

Patagon., Golfo de San Jorge.

6. GUTIERREZIA Lag. (*Brachyris* DC.)

Erect herbs or shrubs, branching upwards, or short and cespitose, with radiate, heterogamous, rather small, yellow *heads*, solitary on ends of branches, or panicled, or corymbed. *Ray-flowers* few, female; *disk-flowers* hermaphrodite, fertile or sterile. *Involucre* narrow-campanulate, its scales few-seriate, imbricate, coriaceous, smaller outwards. *Anthers* basi-obtuse. *Styles* flat, narrow, appendaged. *Pappus*, of many pales, varying, often cleft, or a mere crown. *Achenes* scarcely compressed, many-costate, puberulous or silky.

Species 20, from Western U. S. to Mexico, and extratrop. S. Amer.

1. GUTIERREZIA AMEGHINOI Speg.

Suffruticose, low (5–10 cm.), the branches short, ascending, densely leafy. *Leaves* linear-obtuse, oblanceolate, briefly cuneate-acute at apex, basally attenuate, glabrous, densely glandular-punctate. *Heads* solitary, terminal on leafless branches, *corymbed*. *Ligules* 4–8; tubular flowers 6–8.

S. Patagon., by Rio Deseado; Magellan; Chubut, Cabo Raso. These have caudex woody, branches always herbaceous. (Speg.)

2. G. BACCHAROIDES Sch. Bip.

Low, cespitose, glabrous, viscous shrub. *Leaves* crowded at the apex of the stems, obovate-oblong, entire or ciliate, attenuate-petiolate. *Heads* solitary, sessile amid the uppermost leaves. *Involucre* scales ovate-oblong. *Ray-flowers* 5; disk-flowers 19. *Pappus-pales* 10. *Achenes* hoary, hirtellate.

S. Patagon., by Rio Deseado; Magellan, by Oazy Harbor; Fuegia, at Punta Anegada.

3. G. BRACHYRIS (*Brachyris paniculata* DC., non *Gutierezia paniculata* Gray).

Stem suffruticose, paniculately branching, rather terete. *Leaves* linear, acute, punctate, plane, thickish. *Heads* oblong, paniculate. Ray-flowers 5, slightly exceeding the involucre; disk-flowers 5–6.

S. Brazil.

G. BRACHYRIS PATAGONICA (Speg.).

Somewhat glandular-viscous. *Leaves* oblanceolate, subpectinately ciliolate, long-attenuate and forming a periclad; upper leaves narrower and smaller. *Flowers* yellow, 15–22 in the head.

Patagon., Chubut, in sterile hills.

(Subgenus *Brachyris*, by Nuttall as a genus. Hermaphrodite flowers all usually fertile; pappus of females and hermaphrodites similar, or of the female shorter.)

4. G. CUPRESSIFORMIS Sch. Bip.

Like *Baccharis*, but most beautiful, from its small, imbricating, spirally arranged, 4-ranked *leaves*. *Heads* 8-flowered; outer flowers ligulate, female, having asteroid *styles* with glabrous branches. Inner flowers hermaphrodite, tubular, 5-toothed. *Anthers* tailless. Achenes oblong, glandulous. *Pales*, of many-seriate pappus, lance-linear, serrulate.

Magellan, at Oazy Harbor, in mountainous parts.

5. GUTIERREZIA GILLIESII Gris.

Leaves linear, thick, membranous, green, glabrous, or minutely punctulate and viscous. Lower leaves larger, 3-nerved; upper leaves fascicled on the branches, linear-subulate, 1-nerved. *Flowers* milky, 10 in ray, 12 in disk. *Pappus-pales* 12–14. *Achenes* 8-sulcate, villous.

N. Patagon., by Rio Negro.

6. G. HOFFMANNII O. Ktze.

Low, cespitose, pigmy shrub, branching much, branches crowded, 4–8 cm. high, densely leafy. *Leaves* sessile, attenuate, deciduous, their imbricating bases persisting. Upper leaves 1 cm. by 3–4 mm., glabrous, punctate-viscous, rosulate at the apex of branches. *Peduncle* terminal, 1-headed, with 1–3 small bracts. *Head* turbinate, without ligules. *Involucre-scales* 15, in 3 series. Female flowers of ray 12, with oblong limbs; interior flowers 20, hermaphrodite and tubular. *Achenes* turbinate, pilose. *Pappus-pales* scarious, 15, fimbriate.

Patagon.

7. G. LINEARIFOLIA Lagasca 1816 (non Gray).

Suffruticose, glabrous, resinous. *Leaves* 25 mm. long, or more; scarcely 2 mm. broad, entire; shorter upwards. (Mexico; Chili); N. Patagon.

8. G. SPATULATA Phil.

(*Brachyris.*)

Subcespitose undershrub; branches scaly at base. *Leaves* resinous, punctate, marginally spinulose-ciliate, the lower spatulate. Corymbs many-flowered. *Heads* mostly basi-bracteate. Ligules about 10; disk-flowers the same number. *Branches* 20–25 cm. long; lower leaves 15 mm. long, 5 mm. broad. *Pedicels* 10 mm. *Pales* of achene 8.

(Mexico; Chili); N. Patagon.

7. HYSTERIONICA Willd.

Herbs or undershrubs, mostly hispid or ciliate. *Leaves* basal, mostly narrow and entire. *Heads* rather large, radiate and heterogamous, yellow, solitary on scapiform stems or branches. *Involucre* hemispherical, its scales few-seriate, scarious-margined. *Anthers* basiobtuse. *Style* branches narrow, with flat appendages. *Pappus* double, inner of long slender setæ, not copious; outer short subpaleaceous.

Species 5–6, allied to *Chrysopsis;* S. Brazil; Argentina.

HYSTERIONICA JASIONOIDES Willd.

Leaves linear-lanceolate, sessile, obsoletely decurrent, entire, veinless, setose on midrib and margin.

(Fig. in Eng. & Prantl, iv, 5, p. 147, K.)

Argentina; N. Patagon., common in fields along Rio Negro.

8. LEPIDOPHYLLUM Cass.

Branching or cespitose shrubs, cypress-like, with opposite or alternate, very small or narrow, entire leaves, and small heads solitary on the ends of the branches, or panicled. Heads heterogamous, with very short rays. Involucre narrow, the scales few-seriate, subscarious. Style-branches of the disk-flowers flat, with narrow appendages. Pappus setose or subpaleaceous, copious, unequal. Achenes of the ray compressed.

Species 7, in Andine and extra-tropical S. Amer.

1. L. CUPRESSIFORME (Pers.) Cass. "Mate-verde." (Plate XXVII, A.)

Leaves scale-like, imbricated in fours, opposite. Pappus subpaleaceous. Ray-flowers showy. Habit of *Thuja* (Lignum-vitæ).

One of the chief characteristic plants of S. Patagon., found by the mouth of Rio Sta. Cruz; "a strand-plant, found only eastwards." (Dusén.)

Magellan, E. Fuegia; not in S. Fuegia. "In the Cordilleras; and abounding in the plains, where it is used for fuel." (Hatcher.)

2. L. MEYENI A. Gray. (*L. quadrangulare* Benth. & Hook., by Meyen sub *Baccharis*.)

Leaves small, imbricate in four rows, but alternate. Heads with pistillate ray-flowers incipiently ligulate. Pappus of scabrid setæ.

Chili. (Patagon.?)

9. NARDOPHYLLUM Hook. & Arn. (*Dolichogyne* DC.)

Branching shrubs, tomentose or smooth, with small or narrow, entire, alternate *leaves*, and yellow, discoid *heads*, either solitary at the ends of the branches or sessile in a leafy corymb. *Involucre* oblong, with few-seriate, dry scales. *Anthers* basi-obtuse. *Style-branches* short, flat, with long, obtuse appendages. *Pappus-setæ* copious, unequal, the outer shorter. *Achenes* silky.

Species 10, in Andes of Bolivia and southwards.

"The genus *Nardophyllum* of America is only geographically separate from *Pteronia* of Africa; and both are Aster-species with mostly sessile, solitary heads, having no ray-flowers." (O. Kuntze.)

1. N. DARWINI A. Gray.

Stem and branches suberect, angulate, appressed-tomentose. *Leaves* imbricate, coriaceous, linear, recurved. *Heads* pedunculate. *Involucre* long-campanulate, its scales narrow-linear, acuminate, vernicose.

S. Patagon., by Puerto Deseado.

2. N. HUMILE A. Gray. (Plate XXVII, B.)

Stem prostrate, branching, the branches short, leafy; the *leaves* tomentose underneath, small, imbricate, linear-oblong, obtuse, recurved, coriaceous with revolute margins. *Head* solitary. *Involucral* scales obtuse.

Varies by having the leaves longer or shorter. glabrate or hoary, and heads sessile or not.

Patagon., near Lago Nahuel-huapi; by Rio Sta. Cruz (Hatcher); by Rio Gallegos (O. Nordenskjöld); at Cape Gregory, Magellan; Fuegia. (Verified in Gray Herb.)

3. N. KINGII A. Gray.

Shrub with stem and branches suberect, angulate, appressed, tomentose, lax-leafy. *Leaves* coriaceous, linear, obtuse, recurved. *Heads* rather large, sessile or on short peduncles. *Involucre* broad-campanulate, its scales oblong-lanceolate, acute. *Achenes* silky.

Patagon. and Port St. Helena. (In the Gray Herbarium, a shrub with radiating branches having terminal heads.)

4. NARDOPHYLLUM NARDOPHYLLUM (O. Ktze., sub *Aster*).

Low, erect shrub, with branches leafy and terminally 1-headed. *Leaves* subulate, recurved, tomentose, becoming smooth with age. *Head* sessile, 10-flowered. *Involucral* scales 16–20, in several series, outer ones scarious, short ovate, inner ones linear and longer. *Style-branches* exsert. *Achenes* obconical, angular, pilose, with numerous bristles in 2 series, exceeding the flowers, barbellate above and shorter outwards.

S. Patagon., Killik Aike, by Barnum Brown.

5. N. OBTUSIFOLIUM Hook. & Arn.

Small shrubs, 7–10 cm. high, branched upwards. *Leaves* 3 mm. long, terete, obtuse, spreading-recurved, slightly decurrent, dorsally sulcate.

Patagon.

6. N. STÆHELINOIDES (DC.).

Shrub, with glabrous branches and leaves; the *leaves* 10–12 mm. long, subobtuse, rather remote. *Pappus* cinnamon colored.

(Bonaria); S. Patagon., by Hatcher at Rio Sta. Cruz.

10. SOLIDAGO Linn. Golden-rod.

Perennial, erect herbs, or with woody base, not much branched, with alternate, toothed or entire *leaves*, and small, radiate, heterogamous *heads* (or sometimes radiate and homogamous) of yellow or pallid flowers in leafy panicles or corymbs. *Involucre* narrow, its scales several-seriate, imbricated, smaller outwards. Receptacle small. *Anthers* basi-obtuse. Style-branches flat, with lanceolate appendages. *Pappus* 1–2-seriate, of rough, subequal bristles. *Achenes* usually ribbed.

Species 50, nearly all in N. Amer. Some in W. Indies, Mex., to Chili and Argent., Siberia, the Mediterr. region. *S. virgaurea* L. is spread over the N. Temperate zone of both hemispheres.

1. S. COQUIMBENSE Phil.

Glabrous. *Leaves* linear, acute, entire, sessile. Branches of the contracted panicle erect, few-flowered. *Involucral* scales bright green.

(Andes of N. Chili); N. Patagon., near Rio Negro.

2. S. MICROGLOSSA DC. (*S. linearifolia* DC.)

Stem woody at base, terete, subhirsute. *Leaves* sessile, long-lanceolate, acuminate or linear, puberulous, 3-nerved, the lower appressed and remotely serrulate, the upper entire. *Racemes* secund in an oblong panicle; pedicels bracteolate. *Involucral* scales linear, glabrous. *Flowers* 20–25; ligules 7–15, equal to the disk. *Achenes* slender, glabrous, or hairy.

Variable from dwarf to giant.

(Brazil, Argent.; about Bahia Blanca; "Felel," used by the Indians for giving a yellow dye to wool); common over all N. and Central Patagon. Var. *brachypoda* has leaves, branchlets and involucral scales densely pubescent, and compact panicle.

3. SOLIDAGO PATAGONICA Phil.

Glabrous. *Panicle* pyramidate, leafy, the floral leaves large, sessile, lance-linear, entire. *Branches* of the panicle erect, curving at top, 10-headed; pedicels bracteolate, the lower surpassing the head. *Involucral* scales 5 mm. long, broad-linear. *Heads* with 20 flowers.

W. Patagon.

11. HAPLOPAPPUS Cass. (*Aplopappus.*)

Perennial herbs or undershrubs, with alternate, basally crowded or sparse *leaves*, and large to mediocre *heads*, radiate and heterogamous, with yellow ligules, and 1–3-seriate reddish or whitish, unequal pappus. *Involucre* broad, its scales many-seriate, the outer smaller. Receptacle naked. *Anthers* basiobtuse. *Style-branches* flat, appendaged. *Achenes* obtuse, 8–10-nerved.

Species 60, W. United States, and southwards by the Andes.

(Section *Leiachænium* includes heterogamous species, mostly with smooth achenes.)

1. H. AMEGHINOI Speg.

Glabrous, cespitose perennials, with short, crowded branches, rosulate-leafy at the top. *Leaves* oblanceolate to spatulate, the limb as long as the petiole, toothed-pinnatifid, the lobes also toothed. *Heads* acrogenous, solitary, sessile, hemispherical. *Involucral* scales 4–5-seriate, as long as the many flowers which are concealed amidst the pappus bristles. *Achenes* narrow, obovate, curved, smooth, not costate.

S. Patagon., by Rio Chico de la Sta. Cruz.

2. H. ILLINI Speg.

Glabrous, cespitose perennials, with short, rosulate-leafy branches. *Leaves* obovate-spatulate, crenate-toothed, the limbs shorter than the petioles. *Heads* acrogenous, solitary, subsessile. *Involucral* scales numerous, 4-seriate, lanceolate, as long as the disk. *Flowers* 40–50, the ligulate radiate, orange.

Patagon., rocks near Choique-lauen, and near Lago Musters.

3. HAPLOPAPPUS MOYANOI Speg.

(*Leiachænium.*) Glabrous perennial, with virgate, 1-headed *branchlets. Leaves* downwards remote and pinnatifid, the segments 5–6 pairs, narrow, acute, entire; above laxly bracteolate. *Heads* rather large; involucral scales ovate, rather small and acute, crowded. Ligulate flowers numerous; tubular disk-flowers very numerous. *Achenes* obovate, thick; *pappus* rigid and very caducous, sordidly pale. Undershrub, about 20 cm. high.

Chubut, in rocky places near Lago Fontana.

4. H. MUSTERSI Speg.

Low, glabrous perennial, loosely cespitose, with long, leafy, 1-headed branches. *Leaves* long-spatulate to linear, their limb half to third as long as the petiole; the lower 3–5-dentate-lobed; the upper entire. *Heads* rather long; the involucral scales 5–6-seriate, equalling the disk; *flowers* 120, with golden rays.

Patagon., rocks near Choique-lauen, and near Lago Musters.

5. H. PATAGONICUS Phil.

Glabrous undershrub, with branches densely leafy at base, ending in a long, naked *peduncle*, 1-headed, and with 1–2 setaceous bracts. *Leaves* lanceolate, basally attenuate, dentate in the upper part, with 3–4 acute, mucronate teeth. Margin ciliate, scaberulous. *Involucral* scales lax-imbricate, linear-subulate. *Pappus* yellow. *Achenes* silky-hirsute.

N. Patagon., by shores of Lago Nahuel-huapi; S. Patagon.

6. H. PRUNELLOIDES DC.

Stem herbaceous, subsimple, procumbent, hirsute, leafy. *Leaves* thick, glabrous, oblong-obovate, attenuate-petiolate, serrate to subpinnatifid. *Head* solitary. *Involucral* scales glabrous, dry, oblong-ovate. *Achenes* glabrous.

(Chili); N. Patagon., by Lago Nahuel-huapi.

7. Haplopappus struthionum Speg.

(*Euhaplopappus.*)* Low perennial, densely hispid-setulose. *Stems* subterraneous, sending up leafy branches. *Leaves* obovate, nervose-reticulate, acute, spinulose-mucronate, ciliolate marginally. *Heads* solitary, rather large, terminal on branches. *Involucral* scales lanceolate, hispidulous, the inner scarious-glabrous. Ligules long, orange, spreading. *Pappus* about 1-seriate, whitish, slender, denticulate.

S. Patagon., by Rio Sta. Cruz and Rio Deseado.

8. H. tehuelches Speg. (*H. patagonicus* Speg. non Ph.)

(*Leiachaenium.*) Laxly-branching perennial, with long, subnude branches and 1-headed branchlets. Lower *leaves* fasciculate, subspatulate, 2–4-toothed on both sides; upper leaves remote, small, obovate, pinnatifid, the lobes cut and spinulose. Heads mediocre. *Pappus-setæ* 1-seriate, caducous. *Achenes* glabrous.

S. Patagon., near Rio Sta. Cruz and Rio Deseado.

12. CHILIOPHYLLUM Philippi.

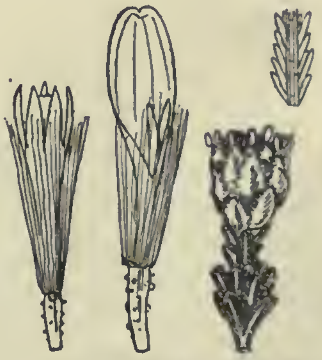
Strongly branched and densely leaved shrubs allied to *Solidago*, but distinguished by having a paleaceous *receptacle*. *Heads* with marginal ligules. *Pappus* setose.

C. densifolium Phil., in Argentina. *Pappus* 1-seriate.

C. fuegianum O. Hoffm.

Branches erect, the old thick, glabrous; the younger tomentellous. *Leaves* erect, spreading, crowded, oblong or ovate, sessile, obtuse, entire, coriaceous, glabrous on upper side, beneath carinate and minutely tomentellous. *Receptacular* pales as long as the flowers, narrow, fimbriate-lacerate. Ray-flowers 6–8, nearly half as long again as the involucre; disk-flowers about 15. Achenes glandular-papillose. *Pappus-setæ* several-seriate, unequal. (Fig. 97.)

Fig. 97.



Chiliophyllum fuegianum.—Flower-head, slightly enlarged, also single disk- and ray-flowers, and a portion of a pappus-hair. (After Hoffmann.)

E. Fuegia, by Rio Cullen.

* *Euhaplopappus* sect, with heterogamous heads; silky, long, narrow, compressed achenes; involucral scales pointed or awned, sometimes divergent.

13. LAGENOPHORA Cass.

Cespitose herbs, with basal, crowded *leaves* and 1-headed, leafless *scapes*. *Head* heterogamous, radiate or subdisciform, the ligules white, the disk yellow. *Receptacle* naked. *Involucral* scales 2-seriate. *Anther* basiobtuse. *Style-branches* flattened, with acute appendages. *Achenes* compressed, narrowed to a rostrum. *Pappus* none.

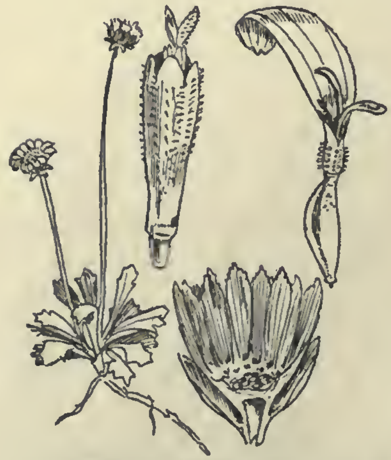
Species 12, Australia and New Zeal., with stragglers in Asia, Antarctic Amer. and Hawaiia.

1. L. COMMERSONII Cass. (*L. nudicaulis* Comm.)

Plant 25–75 mm. high. *Leaves* glabrous or hairy, obovate, obtuse, entire or toothed towards the apex, attenuate to a short petiole. (Fig. 98.)

Falklands; Fuegia to Cape Horn; Magellan, to W. Magellan at Puerto Angusto (Dusén); (S. Chili.) "Tiny" (R. O. Cunningham).

FIG. 98.



Lagenophora commersonii. — The plant, slightly reduced, also the receptacle with involucral scales, and a disk- and a ray-flower, magnified. (From *Flora antarctica.*)

2. L. HARIOTI Franchet.

Leaves hairy, obovate, basicuneate, long-petioled, coarsely 5–9-toothed. *Involucral* scales narrow, acute or acuminate.

Magellan, Clarence I.

3. L. HIRSUTA Poepp. & Endl. (*L. commersonii hirsuta* Lessing.)

Slender rooting perennial, with *leaves* hirsute on both surfaces, membranaceous, petiolate, obovate, coarsely toothed, teeth mucronulate. *Scape* scarcely twice as long as the leaves. *Involucral* scales erect, acuminate, just longer than the disk. *Achenes* with glandular-viscous rostrum.

N. Patagon., by L. Nahuel-huapi; S. Patagon., at Cerro Toro. (O. Nordenskjöld.)

L. HIRSUTA GRACILIS Alboff.

Rhizome creeping, branching, many-stemmed. *Petioles* pilose, as long as the broad-ovate to orbiculate *lamina*, which is basicuneate, appressed, pilose, ciliate-margined, with 5–6 crenate teeth. *Scape* leafless or with a setaceous bract. *Heads* small. *Involucral* scales scarcely ciliate. *Flowers* pale rose-colored.

Fuegia, Rio Olivaia; Navarin I.

Possibly a distinct species; "a charming plantule, scarcely 4–5 cm. in height, with quite small flowers of a tender rose-color, recalling our daisies; one of the few herbs of the Fuegian woods." (Alboff.)

14. ASTER Linn.

Mostly perennial herbs, with alternate *leaves* and heterochromous, radiate *heads*. *Involucre* many-seriate, imbricating. Disk-flowers perfect, yellow. Ray-flowers usually perfect, white to blue. *Anthers* basi-obtuse, Style-branches flattened, with pointed appendages. *Pappus* setose, copious. *Achenes* compressed.

Species 250, with headquarters in N. Amer.

1. A. BUSTILLOSIANUS (Remy, sub *Haplopappus*) O. Ktze.

Fruticose, with glabrous branches, striatulate, leafy below, naked above. *Leaves* oblong-lanceolate, obtuse or acute, narrower basally, glabrous, but the serratures often hairy, veins prominent on both surfaces. *Bracts* on pedicels, subulate. *Involucral* scales lanceolate, acute, outer herbaceous, inner scarious, much shorter than the rays.

Valdivia; Patagon.

2. A. HAPLOPAPPUS (Remy) O. Ktze. (*Haplopappus sericeus* DC., non Ventn.)

Herbaceous perennial, all silk-woolly. Stem ascending, leafy. *Leaves* oblong, 25 mm. long, acute, basi-attenuate, entire. *Head* solitary, terminal. *Involucre* campanulate; its scales laxly imbricate, linear, obtusish, the outer subvillous, the others glabrous, dry. *Ligules* scarcely exceeding the involucre. *Achenes* long, hirsute. *Pappus* several-seriate, rufescent.

(Chili); N. Patagon., by Rio Negro.

3. A. LINIFOLIUS Linn. (*A. subulatus* Mex.) (Nees, sub *Galatella.*)

Glabrous annual, with strict, terete, apically corymbose stem. *Leaves* linear or broader, entire, punctate on both sides, rough, 1-nerved. *Branches* 1-headed, bearing small, linear-subulate leaves. *Involucral* scales lanceolate, acute, shorter than the disk. *Ligules* few, purplish, not exceeding the disk.

(N. Amer.); Patagon., by Rio Negro and Rio Chico de la Sta. Cruz.

4. ASTER MONTEVIDENSIS Gris. (*Leucopsis diffusa* Baker.)

Stems leafy, few-headed, white-hoary. *Leaves* also hoary. *Heads* heterogamous, small for the genus. *Involucre* obscurely pilose.

(Argentina; Uruguay); N. Patagon., by Rio Negro.

5. A. SENEBIERIFOLIUS O. Ktze. (*Aplopappus coronopifolius* DC.)

Glabrous, ascending undershrub, with oblong-obovate, cuneate *leaves*, attenuate-petiolate, coarsely incise-serrate, non-prominent nerves; and subsolitary, *1-headed*, nearly naked *peduncles.* *Involucral* scales narrow-linear, acuminate, subsquarrose, serrulate-subciliate. *Achene* rather silky-villous. *Pappus* rufous and corolla yellow.

Patagon.

6. A. VAHLII Hook. & Arn. (*Erigeron wahlii* DC.)

Glabrous herb, with simple, erect stem. *Leaves* obovate-lanceolate, acutish, remotely serrate, narrowing below, sheathing at base. Ray-flowers pluriseriate. Head rather large. Involucral scales pubescent. Outer ligules broad. Pappus sordid-white. Achenes hairy.

(S. Chili); S. and W. Patagon., in Valley of Rio Aysen; Fuegia, passim to Cape Horn, "in steppes, rarer in forests" (Dusén); Falklands.

15. ERIGERON Linn.

Herbs, with alternate, often basal, usually not dissected, *leaves*, and solitary or corymbed, heterogamous *heads*, with numerous, narrow rays, of different color from the yellow disk, or rays sometimes obsolete and heads then disciform. *Involucre* hemispheric or campanulate; its scales narrow, subequal, usually in 1–2-series. *Receptacle* generally naked. *Anthers* basiobtuse. *Style-branches* flat, with short, obtuse or rounded appendages. *Pappus-setæ* 1- or partly 2-seriate, slender and fragile. *Achenes* compressed.

Species 150, chiefly in N. Amer.; many also in Eurasia, S. Amer. and Australia; the introduced *E. canadensis* in S. Africa.

KEY TO THE SPECIES.

A. Heads 1–few.
  b. Cespitose.
    c. Glabrous.
      d. Nearly stemless.
        e. Leaves rosulate, oblanceolate. Heads sessile amid the leaves. Involucre woolly. Ray pink-whitish. *erianthus.*
        e2. Leaves linear-oblong, basiattenuate; the cauline few, semiamplexicaul. Involucre as long as disk; ray twice as long. *glabrifolius.*
      d. Stem erect.
        e. Stem leafy; leaves linear, the radical longer. Pedicel hoary. Ray white, not long. Achenes hairy. *gayanus.*
        e2. Radical leaves long-linear, petiolate, obtuse; cauline acuminate, sessile. Involucre hispid, green. *ibari.*
    c2. More or less pubescent.
      d. Leaves lanceolate, villous, few-headed. Rays white, long, narrow. *alpinus.*
      d2. Leaves canescent, linear-spatulate to linear, erect, as long as the stems. Involucral white, hirsute. *patagonicus.*
      d3. Leaves linear, ciliate, hispid. Ligules short, lilac. Achenes glabrous. Pappus rufescent. *andicola.*
  b2. Stem bearing.
    c. Leaves subrosulate, erect, attenuate both ways. Ligules not long. Achenes hairy. *angustifolius.*
    c2. Leaves rather obtuse and broad. Involucral hoary below, glabrous and black upwards. Achenes hairy. *philippi.*
    c3. Hoary. Radical leaves broad, rounded above. Ligules lilac, not long. Achenes puberulous. *remyanus.*
    c4. Hirsute.
      d. Stem erect, rather tall, Leaves linear. Flowers purplish, peduncle strict. *myosotis.*
      d2. Leaves linear-lanceolate, glabrous (except the nerves, etc.), attenuate both ways. Stem hirsute. Ligules as long as the disk. Achenes pilosulous. *bonariensis.*
      d3. As *d2*, but stem smoothish, involucre shorter. Achenes ribbed at margins. *bonariensis-glabratus.*
      d4. Radical leaves long, linear, cauline shorter. Ligules purple, shorter than the disk. *lacarensis.*
    c5. More or less hispid.
      d. Stem strict, erect, 1-headed. Leaves linear, obtuse, hispidulous. Ligules long, whitish-pink. Achenes glabrous. *poeppigii.*
      d2. Stem short, leafy. Leaves elliptic-ovate, entire. Scape erect; head 1, large. *sullivani.*
      d3. Stem short. Basal leaves spatulate; cauline linear-lanceolate. Ray twice as long as disk. Achenes glabrous. *cinereus.*
A2. Heads numerous.

b. Glabrous. Leaves long-linear, acuminate. Involucral scales green, purple-tipped. Corymbs lax. *semiamplexicaulis.*

b2. Pubescent. Leaves long-linear, subserrate, narrower above. Small heads corymbed. *nemoralis.*

b3. Hispid, paniculate. Leaves linear-lanceolate, toothed. Heads purplish-tipped. Achenes hairy. *lechleri.*

b4. Hispid, corymbose. Leaves linear-oblong, entire. Achenes hispid. *spinulosus.*

b5. Panicle contracted. Ligules blue. *brevicaulis.*

1. ERIGERON ALPINUS Linn.

Stems subcespitose, 1–few-headed. *Leaves* lanceolate, acutish, villous or ciliate, entire. *Involucral* scales subulate at top, more or less hirt. *Ligules* twice as long as the disk. *Pappus* slightly exceeding the achenes.

"Like *E. uniflorus*, but with scapes having mostly more than 1 head, lower leaves spatulate, upper leaves linear" (A. Gray); a polymorphous species.

Northern and arctic regions of Eurasia and Amer.; S. Patagon.

A specimen in Gray Herbarium is signed in 1767 by Commerson, and labeled *E. myosotis* Pers. "floris (sic) ex purpureo ad album discoloris," with note "De salute der Patagones, dans le fonds de la Bay Boucent. X$^{\text{bre}}$ 1767 Commerson." Its ligules are white, long and narrow. Specimens by Hatcher from Coy Inlet (Nov. 23, 1896) agree with Commerson's, and appear not to differ from the Linnæan *E. alpinus.*

E. ALPINUS MYOSOTIFOLIUS Hook. f.

Cauline *leaves* sessile, linear, subobtuse, appressed-hoary. Floral leaves solitary or aggregate at top of the stem.

Patagon. (?).

2. E. ANDICOLA DC.

Cespitose. Stems numerous, erect, 1-headed. Leaves linear, ciliate, hispid, the radical erect, basi-attenuate, the cauline sessile, few. *Heads* hemispherical to campanulate, 10 mm. long. *Ligules* narrow, short, lilac. *Achenes* glabrous, narrow, shorter than the rufescent *pappus.*

Mid-Patagon., by Golfo de San Jorge; Cordilleras.

3. E. ANGUSTIFOLIUS Phil.

Stem slender, lax-pilose, *1-headed.* *Leaves* lax-rosulate at its base, rather erect, 5–10 cm. long, shortly attenuate upwards, over 2 mm. broad, and long-attenuate downwards, subcanescent. *Head* subhemispherical, 9 by 10 mm.; with white to pink, narrow, not long ligules. *Pappus* short, scarcely rufescent. *Achenes* hairy, narrow-compressed.

S. Patagon., by Lago Argentino.

4. ERIGERON BONARIENSIS Linn. (including *E. sordidus* Gill.).

Stem hirsute, erect. *Leaves* linear-lanceolate, glabrous except on nerves and margins, attenuate both ways; lower coarsely incised-toothed; upper entire. *Panicle* long, contracted. Involucral scales and slender ligules equalling the disk. *Achenes* pilosulous.

(S. Brazil); Argent.; Patagon.; "Chileca" (Span.) or "Sassin" (Arauc.) by Rio Negro and Rio Chubut. Valley of upper Rio Aysen (Dusén).

5. E. BONARIENSIS GLABRATUS Speg.

Departs from the type by having the *stem* more subglabrous and the *leaves* ciliate-pubescent only underneath at the nerves and margin. *Heads* 7 mm. every way, with involucre half shorter than the disk. *Achenes* compressed, ribbed at the margins, pubescent.

N. Patagon., common along the Rio Negro.

6. E. BREVICAULIS Phil.

Panicle contracted. *Heads* with acute, hispid scales. *Ligules* lilac, 6 mm. long, nearly as long as the disk. *Achenes* 2 mm. long, narrow, shorter than the scarcely rufescent pappus.

S. Patagon., by Lago Argentino.

7. E. CINEREUS Hook. & Arn. (*E. divergens cinereus.*)

Pilose-hispid. *Stem* short, decumbent, 1–3–5-headed. Radical *leaves* spatulate; cauline linear-lanceolate. *Involucre* tomentose-hirsute, its scales imbricate, many-seriate, linear, acute, subequal. Ray twice as long as disk. *Pappus* 2-seriate, outer series very short. *Achenes* as long as the pappus, compressed, 2-edged, glabrous.

(Chilian Andes); Patagon.

(*E. divergens* T. & G., descr. and Fig. in Britt. & Br., iii, p. 388.)

8. E. (?) ERIANTHUS Speg.

Stemless, cespitose. *Leaves* densely imbricate-rosulate, oblanceolate, more or less obtuse, somewhat attenuate-petiolate, glabrous. *Heads* sessile amid the leaves, mid-size. *Involucral* scales several-seriate, acute, attenuate, villous-woolly. Marginal flowers pink-whitish; central yellow.

S. Patagon., by Lago Argentino.

9. ERIGERON GAYANUS Remy. (*E. gayanus leptophyllus* Speg.)

Stem leafy, 10–20 cm. high, 1-headed or 3–6-headed. *Leaves* linear, glabrate, the radical leaves longer and broader. *Heads* short-peduncled; pedicels hoary. *Involucral* scales hispid, colored. Ligules whitish, not long. *Achenes* hairy, shorter than the scarcely rufescent pappus.

(Chili); Patagon. by Rio Chubut; Lago Musters.

10. E. GLABRIFOLIUS DC.

Shrubby rootstock, nearly stemless, glabrous. Radical *leaves* linear-oblong, basally attenuate; cauline few, semiamplexicaul; all entire, acute. *Stem* ascending, *1-headed*. *Involucral* scales equalling the disk, oblong, obtuse, appressed; *ligules* twice as long as the disk. 5–7 cm. tall.

(Chili); Fuegia, rare on margins of mountain lakes.

11. E. IBARI Phil.

Cespitose, glabrous. Radical *leaves* long, linear, 6 cm. by 4 mm., narrowing to a petiole, rather obtuse; cauline leaves sessile, long-acuminate. *Stem* erect, about *3-headed*, equalling the radical leaves to thrice as long. *Heads* 13 mm. diam. *Involucral* leaves hispid, green.

Magellan, near Skyring Water.

12. E. LACARENSIS Phil.

Hirsute perennial. *Stem* erect, 20–30 cm. high, about *3-headed*. *Radical* leaves crowded, elongate, linear, attenuate to a long petiole. Cauline leaves becoming shorter. *Heads* short-pediceled, 15 mm. diam. *Involucral* scales narrowly linear, hispid. *Ligules* purple, slightly exceeding the disk.

(Andes); Valdivia; Magellan. (Dusén.).

13. E. LECHLERI Sch. Bip.

Stem herbaceous, erect, 45 cm., leafy, purplish, hispid, paniculately corymbose. *Leaves* linear-lanceolate, hirtellate, toothed, with incurved tips of teeth. *Heads* campanulate, 5–7 mm. diam., numerous, crowded.

Involucral scales linear, obtuse. *Receptacle* pitted. *Flowers* purplish at apex, the female flowers equalling the disk. *Achenes* ovate-compressed, margined, hairy. *Pappus* rufescent.

S. Patagon., along Rio Sta. Cruz; at Punta Arenas.

14. ERIGERON MYOSOTIS Pers.

Stem simple, 30 cm. high, about 1-*headed*. *Leaves* linear, hirsute. *Flowers* purplish.

J. D. Hooker unites this with *E. alpinus* L. Against this A. Franchet says, "It differs by having its leaves narrower, linear or linear-spatulate, always very close on the stem, and the inflorescence is in a long raceme, though sometimes reduced to a head. Peduncles very short or long, but always parallel with the stem. Leaves less diverse than in *E. alpinus*, and not rosulate at the base. Flowers purplish."

S. Patagon., by Puerto Deseado; Magellan; Fuegia passim, "a steppe plant" (Dusén); by Hatcher at Ushuaia.

15. E. NEMORALIS Phil.

Stem erect, with spreading hairs; and *leaves* with appressed hairs. Lower *leaves* oblong-linear, few-serrate; upper narrower, entire. *Corymb* of 20–30 small heads.

W. Patagon., on Rio Palena, W. of Southern Cordilleras.

16. E. PATAGONICUS Phil.

Cespitose, 9 cm. high. *Stems* numerous, simple, 1-headed. *Leaves* linear-spatulate to linear, as long as the stems, erect. *Involucral* scales white, hirsute.

Magellan, at Rio Dinamargueco near Punta Arenas.

17. E. PHILIPPI Sch. Bip.

A low and a tall form, 4 and 16 cm. high, respectively; differing from the Chilian *Erigerons* by having *leaves* more obtuse and broader; *involucral* scales hoary in their lower part, black and glabrous above. *Achenes* laxly and appressedly hairy.

S. Patagon., by Lago Argentino.

18. ERIGERON POEPPIGII DC.

Stems strict, erect, often simple, *1-headed.* Plants hispidulous. *Leaves* linear, narrow, obtuse. *Heads* hemispherical, with long, whitish-pink *ligules.* *Achenes* glabrous, compressed, not as long as the pink-rufous pappus.

S. Patagon., near Lago Viedma.

19. E. REMYANUS (Remy) Speg. (*E. myosotis* Remy non Pers.)

Radical *leaves* obovate to spatulate, broad, rounded at apex, submucronulate or subretuse, slightly hoary. *Head* often solitary, acrogenous (7 mm. long by 9 mm. diam.), with lilac, scarcely exserted ligules. *Achenes* narrow, 3 mm. long, puberulous. *Pappus* rufescent.

S. Patagon., by Rio Sta. Cruz; Rio Coy (J. B. Hatcher, Dec. 17, 1896).

20. E. SEMIAMPLEXICAULIS Mey. (including *E. scorzonerifolius* (Remy) Speg.).

Glabrous. *Stem* herbaceous, strict, sparsely branching. *Leaves* long-linear, acuminate, scarcely amplexicaul. *Corymbs* lax; *heads* terminal on the branches. *Involucral* scales green, scarious, apically purplish, shorter than the disk. *Achenes* lanceolate, compressed, puberulous.

N. Patagon., Rio Negro; S. Patagon., by Rio Sta. Cruz, Gallegos; Gregory Bay.

E. SEMIAMPLEXICAULIS SCORZONERIFOLIUS (Remy).

Low, 6 cm. high. Radical *leaves* narrow-linear-lanceolate. *Stem* scape-like, with many bract-like leaves. *Ligules* slightly broader than in the type.

Fuegia, by Harberton Harbor. (Alboff.)

21. E. SPINULOSUS Hook. & Arn.

Stem erect, hispid, *lax-corymbose* above; with rigid setæ, sparse below, but crowded and appressed on the pedicels. *Leaves* linear-oblong, acute, entire, with cartilaginous margin, scabrid. *Involucral* scales and minute ligules equalling the disk. Achenes hispid, 2 mm. long, their margins nervose. Pappus whitish.

(Chili); Magellan; Port Negro; N. Patagon., by Lago Nahuel-huapi; S. Fuegia, at Ushuaia. (J. B. Hatcher.)

22. ERIGERON SULLIVANI Hook. f.

Entirely subhirsute, with appressed hairs. *Stem* very short, depressed, bi-tri-cipital, leafy. *Leaves* stellately spreading, elliptic-ovate, subacute, entire, narrowing to a petiole. *Scape* erect, 1-*headed*, bracteolate, with linear *leaves*. *Head* rather large, depressed. *Involucral* scales narrowly linear, hispid-woolly.

"Like *E. uniflorus*, but with broader leaves, distinct petiole, and elliptic-ovate lamina, not spatulate." (J. D. Hooker.)

Falklands, on moist cliffs; at Punta Arenas; S. Patagon., by Hatcher at Cabo Negro, Jan. 13, 1897.

16. VITTADINIA A. Rich.

Herbs or undershrubs, with alternate *leaves* and mid-sized, mostly radiate *heads;* both ray- and disk-flowers fertile, heterochromous, or sometimes with discoid heads; *involucre* broad, its scales few-seriate, imbricate, narrow, scarious-margined, the outer scales smaller. *Receptacle* naked. *Anthers* basiobtuse. *Style-branches* narrow, with subulate appendages. *Pappus* setæ copious, unequal. *Achenes* compressed.

Species 8, severally in S. Amer.; Papua; Australia (1 of the Australian forms in New Caledonia); and in Hawaiia.

1. V. MULTIFIDA Gris. (*Baccharis ulicina multifida* O. Ktze.)

Glabrous. *Heads* discoid. Stem 1 meter high, suffrutescent, virgate, striate, leafy, corymbose at top. *Leaves* pinnatisect, the segments remote, 3–6 pairs, filiform, acute. *Involucral* scales lanceolate, acute, ciliolate. *Pappus* 1-seriate. *Achenes* oblong, smooth.

N. Patagon., near Rio Negro.

2. V. TRIFURCATA Benth.

Heads radiate. *Leaves* less dissected than the preceding. *Pappus* yellowish and pink in the same flower.

(S. Brazil); by Rio Negro, and in various other parts of Patagon.

17. CHILIOTRICHIUM Cass.

Shrubs, with entire, narrow *leaves*, tomentose on the under surface, and with long-pediceled *heads*, having white or violet ray-flowers, or heads discoid. *Involucre* campanulate, its scales scarious, smaller outwards. *Receptacle* with chaff. *Anthers* basiobtuse. *Style-branches* flat with narrow appendages. *Pappus-bristles* 2–3-seriate, unequal. *Achenes* subcylindrical, 5-ribbed.

Species 3, Peraustral Amer.

Here, as in *Senecio*, J. D. Hooker notes that radiate flowers affect a damp, and discoid flowers a dry climate. (*C. darwinii*, *humile* and *kingii* are now placed in the genus *Nardophyllum*.)

1. Chiliotrichium diffusum (Forst, sub *Amellus* 1787) O. Ktze. (*C. amelloideum* Cass., 1817).

Shrub, 2–3-meters high. *Leaves* oblong, obovate, narrow at the base, plane, margin revolute; tomentose underneath.

Heads with large, yellow disk and white ray.

"Habit of Rosemary, allied to *Olearia* of Australia and New Zealand." (J. Ball.)

Patagon., Magellan and Fuegia, a common bush; by Hatcher at Cordilleras of S. Patagon., and at Cabo Negro; by Dusén in W. Patagon. Also found at Lago Argentino and Chubut R., "a steppe plant." Falklands, "nearest approach to a tree of the Falkland Is." "in moist places." "Is 8 feet high with large, white-rayed head," R. O. Cunningham; got by B. Brown in Spaniard Harbor, Fuegia, March 22, 1900. "Three forms according to the breadth of the leaves,—a typical, a medium and a narrow-leaved form: leaves obovate to oblanceolate, thence to linear-oblanceolate and acute" (Speg.).

2. C. rosmarinifolium Less.

Branching shrub, obsoletely tomentose and densely leafy upwards, but not near the top of the flowering branches. *Leaves* coriaceous, shining above, tomentose underneath, linear, acute, 1-nerved, the nerve prominent below and glabrous; margin revolute, entire. *Heads* terminal, solitary, erect, disk 8 mm. long. Ray white? *Involucre* shorter than the disk, campanulate, its scales many-seriate, dry, lanceolate, with a green nerve, entire, the outer more obtuse. *Bracteoles* scarious, conduplicate. *Pappus* setaceous, shorter than the disk.

(Chili); Patagon., in Cordilleras of Chubut.

18. CONYZA Less.

Herbs, rarely shrubs, with alternate *leaves* and small to midsized, disciform, heterogamous *heads*. *Involucre* campanulate, its scales 2–many-seriate, often dry, smaller outwards. Disk-flowers yellow. Marginal flowers pale, filiform, 2–3-toothed, often ligulate. *Anthers* basi-obtuse. *Style-branches* flat, appendaged. *Pappus-setæ* slender. *Achenes* small, compressed.

Species 50, in warm climates.

1. CONYZA ARMERIÆFOLIA Phil.

Green, setulose-hispid, 60 cm. high, branching, terete, leafy corymbose. *Leaves* all narrow-linear, entire, the basal most crowded. *Heads* nearly 1 cm. diam. *Involucral* scales obtuse, white-setulose outside; the inner scarious-margined. *Achenes* setose-pubescent.

S. Patagon., by Rio Deseado, near Linares.

2. C. AUSTRALIS Phil.

Stem erect, simple, with sparse, white, erect hairs. *Leaves* spreading, petiolate, linear, acute, entire, with hairs on the stem. Racemiform *corymb* of 10 heads, each 5 mm. long. Outer *involucral* scales dorsally white-setose, marginally lacerate-ciliate. Flowers as long as the involucre.

By Rio Palena, W. of the Cordillera.

3. C. CHILENSIS Spreng.

Stem herbaceous, erect, subsimple, terete, striate, nervous, hirsute. Radical *leaves* spreading, oblong, basi-attenuate, obtuse, sinuate. Cauline leaves few, semiamplexicaul, subhirsute, lanceolate, acute, subentire. *Heads* corymbed, few, very broad.

Common in Chili and N. Patagon., along the Rio Negro.

19. CHRYSOCOMA Linn.

Branching, glabrous undershrubs, with alternate, linear *leaves*, and midsized or small homogamous, discoid, yellow *heads* terminating the branches. *Involucre* hemispherical or campanulate, its scales few-seriate, imbricate, narrow, scarious, the outer shorter. *Anthers* basally obtuse. *Style-branches* narrow, flat, with lanceolate appendages. *Achenes* small, mostly villous. *Pappus-setæ* 1-seriate, white.

Species 8, S. Africa, and the following:

CHRYSOCOMA CUNEIFOLIA Jacq.

Glabrous shrub. *Leaves* shortly petiolate, cuneiform, few-serrate towards the apex, about 4 cm. long. *Peduncles* terminal, very short, sometimes solitary, sometimes crowded, all with leaves enclosing the subsessile *flowers*. *Receptacle* naked. *Pappus* pilose, equalling the corolla.

Magellan.

20. HETEROTHALAMUS Less.

Glabrous or glutinous shrubs, with alternate, entire or toothed, or no *leaves;* and small, polygamo-diœcious *heads*. Heads in one plant hermaphrodite and discoid, but sterile, or with fertile ray-flowers; in another plant discoid and all fertile. *Anthers* basi-obtuse. *Style-branches* of the perfect flowers narrow, ciliate, or cohering. *Pappus-setæ* often clavate. *Achenes* glabrous.

Species 5, S. Amer.

1. H. NIVALIS (Sch. Bip.) Wedd.

Cespitose or suffruticose, branching much, diœcious. *Leaves* linear, 1 cm. long, plane, attenuate downwards. Floriferous branches first bending, then ascending a few cm., with *heads* solitary on terminal peduncles. *Pappus-bristles* very tortuous.

(Chili, near the snow); W. Fuegia, by Rio Condor. (Dusén.)

2. H. SPARTIOIDES Hook. & Arn.

Leafless and diœcious, resembling *Baccharis aphylla* DC. (Eng. & Prantl, iv, 5, p. 171, A). Much branching, with minute, scale-like, acute, remote *leaves*. *Heads* in racemes or corymbs.

Patagon., by Rio Negro; Rio Chubut; Rio Chico de la Sta. Cruz.

3. H. TENELLUS (Hook. & Arn. sub *Baccharis*) O. Ktze.

All pubescent-hoary, suffruticose. *Branches* angulate. *Leaves* alternate, remote, linear-subulate, entire, acute, slightly rigid, 1-nerved. *Heads* terminal, solitary, rather large. *Involucre* broad-campanulate; its scales ovate, acute, imbricate, apically naked and colored.

N. Patagon., near Carmen; S. Patagon., by Rio Sta. Cruz.

H. TENELLUS GRACILIOR.

Bahia Blanca to N. Patagon.

HETEROTHALAMUS TENELLUS ROBUSTIOR.

S. Patagon., St. Julian.

"Our plants are all males." (H. & A.)

21. BACCHARIS Linn.

Shrubs or herbs, with *diœcious*, discoid, small or mid-sized heads, female in the fertile plants, hermaphrodite in the sterile. *Anthers* basi-obtuse. *Achenes* compressed, usually 5–10-costate. *Pappus-setæ* copious, 1 to several-seriate, fewer and tortuose in the sterile flowers.

(Fig. in Eng. & Prantl, iv, 5, p. 171.)

Species 300, chiefly in trop. Amer.; some in U. S.; in W. Indies. Of many only one sex is known; consequently the specific characters are derived chiefly from the leaves. Young leaves and twigs frequently bearing glandular hairs which produce a colorless secretion. (Volkens.)

KEY TO THE SPECIES.

A. Branches 3-winged.
b. Leaves reduced to acute scales. Interrupted spikes. *trimera*.
b2. Glabrous.
c. Leaves elliptic-ovate. Achenes costate. *chubutensis*.
c2. Leaves minute, subternate scales. Heads 1–many spicate. Achenes sulcate. *genistelloides*.
b3. Leaves linear-lanceolate. Heads spicate. *sagittalis*.
A2. Branchlets angular.
b. Glabrous.
c. Leaves fan-shaped, toothed, viscid when young. Heads axillary, crowded. *flabellata*.
c2. Leaves linear, toothed. Heads crowded at ends of branches. *denticulata*.
c3. Leaves obovate-oblong, a tooth on each shoulder. Heads crowded. *conferta*.
c4. Branches leafy. Leaves linear-attenuate. Heads solitary. *gilliesii*.
b2. Glabrous-viscid.
c. Leaves obovate-cuneate, subentire, evergreen. Heads solitary, sessile on ends of branches. *magellanica*.
c2. Leaves ovate-cuneate, rugose, toothed. Pedicels axillary, 1-headed. (Viscid when young.) *patagonica*.
c3. Leaves cuneate, tridentate. Female heads axillary. *microphylla*.
c4. Young branches striate-angulate. Leaves oblong-cuneate, apically toothed, narrower upwards. Spicate heads. *platensis*.
b3. Puberulous. Leaves remote, linear, entire. Heads solitary on corymbed branches. *darwinii*.
A3. Branchlets terete.
b. Puberulous at first, then glabrous-viscid. Leaves linear, toothed. Heads many, terminal. *confertifolia*.

- *b*2. Branchlets sulcate.
  - *c.* Dwarf. Leaves small, linear, subentire. Heads solitary on the branches. *nana.*
  - *c*2. Leaves lance-linear, pectinately spinulose. Heads subcorymbose. *melanopotamica.*
- *b*3. Branches striate. Glabrous.
  - *c.* Leaves few, sessile, linear, entire. Heads 3–5 on the branches. *genistifolia.*
  - *c*2. Leaves pinnatifid, decurrent, segments narrow, mucronulate. Heads corymbed. *pinnatifida.*
  - *c*3. Leaves subulate, mucronate, often pinnatifid. Heads solitary on ends of branches, often corymbed. *ulicina.*

*A*4. Various.

- *b.* Tall shrubs with spongy wood, and lance-linear, resinous leaves. Corymbs. *salicifolia.*
- *b*2. Erect shrubs, with firm stem, ovate-lanceolate, serrulate leaves, subglabrous. Heads corymbed. *serrulata.*
- *b*3. Subglaucous herb, with rush-like stems, and linear, distant leaves. *juncea.*
- *b*4. Low, branching shrub, leafy above, scars below. Leaves oblong, toothed-setose. Male heads small, solitary. *dusenii.*
- *b*5. Branches punctulate, laxly leafy. Leaves narrow, punctulate. Corymbed. *pingræa.*
- *b*6. Branchlets and leaves resinous-glandular. Leaves linear, obtuse, thickish. Corymbed. *rosmarinifolia.*
- *b*7. Branches crowded, erect. Leaves small, crowded, hoary underneath. Heads solitary, terminal. *bryoides.*
- *b*8. Glabrous, branching annual. Leaves linear-subulate. Heads subcorymbose. *subulata.*
- *b*9. Inflorescence paniculate. Involucre woolly, lax. *artemisioides.*
- *b*10. Inflorescence umbelliform. Leaves obovate-cuneate, toothed. *umbelliformis.*
- *b*11. Imperfectly known.
  - *c.* Heads subsessile, spicate, leafy, terminating the branches. *rufescens.*
  - *c*2. Leaves opposite, lanceolate. *urvilleana.*

1. BACCHARIS ARTEMISIOIDES Hook. & Arn.

Habit of *Artemisia absinthium*, from a racemiform *panicle* and woolly *involucre.* Involucral scales lax, rather broad. *Heads* androgynous, 4 mm. diam.

Argentina; N. Patagon., by Rio Negro.

2. B. BRYOIDES Pers.

Branching, prostrate undershrub; with crowded, erect *branchlets. Leaves* very small, crowded, linear, hoary beneath. *Heads* 6–8-flowered, terminal, solitary, sessile. *Involucre* cylindrical, its scales oblong.

"Magellan Strait or Patagonian shore" (Commerson). "Genus doubtful" (DC. Prodr.).

3. BACCHARIS CHUBUTENSIS Speg.

Stem leafy, glabrous, with erect, subsimple *branches*, having 3 broad, remotely interrupted *wings*. *Leaves* sessile, elliptical or ovate. *Heads* mostly apical, rather large, few-glomerulate on the central branchlet. *Involucral* scales acute. *Achenes* 6-costate, minutely and closely papillate.

Rootstock woody, thick, nodose; branches 20–50 cm. tall.

Patagon., Chubut, in swampy mountain meadows.

4. B. CONFERTA H. B. & K.

Glabrous, branching plants, subviscous at the apex; branchlets decurrent, angular. *Leaves* sessile, obovate-oblong, 10–14 mm., acute, basi-cuneate, a tooth on each side near apex, nearly veinless. Female heads terminal, crowded, subsessile. *Involucral* scales lanceolate, the inner ones acuminate, at length squarrose. *Achenes* striate, glabrous.

(Mexico); Falklands.

5. B. CONFERTIFOLIA Colla.

Shrub, from puberulous becoming glabrous, slightly viscid. *Branchlets* terete. *Leaves* linear, elongate, attenuate-petiolate, acute, coarsely toothed-serrate to entire, 3-nerved. *Heads* many on ends of the branches. *Involucres* ovate, their scales lanceolate, scarious, stramineous, glabrous; of the male oval-oblong, obtuse; of the female acute.

(Chili); N. Patagon., by Lago Nahuel-huapi.

(*B. cuneifolia* Lam. sub *B. magellanica*.)

(*B. cylindrica* DC. sub *B. genistelloides*.)

6. B. DARWINII Hook. & Arn.

Suffruticose, erect, puberulous; *branches* angulate-striate. *Leaves* remote, linear, canaliculate, subcarnose, obscurely 1-nerved, entire, ending in a hair or a soft mucro. *Head* solitary, terminal on subcorymbose branchlets. *Involucre* hemispherical, its scales obsoletely 1-nerved, lanceolate, acuminate, the margins broadly scarious, entire.

Patagon., by Rio Negro; Golfo de San Jorge; Rio Sta. Cruz and Rio Chico; Puerto Madryn (Dusén). "The South Patagonian specimens are prostrate, leaves broader; those from Rio Negro are tall (50–80 cm.), erect, patent-ramose, with leaves more remote and smaller."

7. BACCHARIS DENTICULATA DC.

Glabrous, branching shrub, with subangulate *branches.* *Leaves* linear, 7 by 2 mm., basiattenuate, acutely and coarsely 2–3-toothed at apex, coriaceous. *Heads* crowded at ends of the branches, oblong, glabrous. *Involucral* scales acuminate. *Pappus* slightly exceeding the involucre. *Achenes* glabrous.

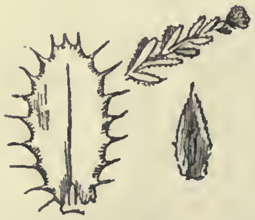
(Argentina); N. Patagon.

8. B. DUSENII O. Hoffmann.

Low, branching undershrub, 7 cm. high. *Branches* with leaf-scars below, leafy above. *Leaves* sessile, oblong, 10 by 3 mm., 3-nerved, the lateral nerves faint, sinuate-dentate, the teeth ending in white setæ. *Male heads* small, solitary on ends of the branches, short-pediceled. *Involucre-scales* 3-seriate, 1-nerved, their margin hyaline, fimbrillate. Female heads? (Fig. 99.)

S. Patagon., by Puerto Madryn. (Dusén.)

FIG. 99.



Baccharis dusenii. — Branch with flower-head; also (magnified) leaf and involucral scale. (After O. Hoffmann.)

9. B. FLABELLATA Hook. & Arn.

Fruticose, erect, glabrous; *branches* angulate, the younger viscid. *Leaves* fan-shaped, coriaceous, coarsely angulate-toothed, obscurely 3-nerved, obsoletely pitted, attenuate-petiolate. *Heads* sessile, axillary, crowded; *involucre* ovoid, its scales ovate, 1-nerved, the inner longer.

(Brazil, Prov. of St. Louis); N. Patagon., by confluence of Rio Limay and Rio Neuquen.

10. B. GENISTELLOIDES (Pers.) Lam.

Undershrubs, 3-winged. *Wings* plane, nerveless, short or often interrupted. *Leaves* very small, reduced to subternate, acutish scales. *Heads* few (1–2), interruptedly spicate. *Involucre* turbinate, its scales all acuminate. Rachis naked. *Achenes* glabrous, cylindraceous, sulcate.

(Peru.)

P. GENISTELLOIDES CYLINDRICA (DC.) Bkr.

Herbaceous, 3-winged. *Leaflets* reduced to mere scales. *Heads* spicate-glomerate; the male involucre campanulate; the female oblong-cylindrical; the scales acute. *Achenes* glabrous.

(Brazil; Argentina); N. Patagon., high plains along Rio Negro.

11. BACCHARIS GENISTIFOLIA DC.

Glabrous, branching shrub, with striate *branchlets*. *Leaves* few, distant, sessile, linear, 10 by 1 mm., obtuse, entire, nearly nerveless. The *male-heads* 3–5, sessile, terminating the branches, spicate-crowded, bractless. *Involucre* obovate, its scales ovate, acute, membranaceous-margined. Habit of *Genista tinctoria*. Female plant?

(Brazil; Chili; Argentina); S. Patagon., by Rio Chico.

12. B. GILLIESII A. Gray.

Low, glabrous, from a woody base, much branching. *Branches* slender, striate-angled, leafy. *Leaves* sessile, linear-attenuate, or 2–4-toothed, 1-nerved; those of the branches small. *Heads* solitary, terminal. *Involucre* campanulate, the scales obtuse, scarious-margined, woolly-tipped. *Pappus* thrice as long as the involucre. *Achenes* glabrous.

(Argentina); sandhills at the mouth of Rio Colorado, near the sea; and through N. Patagon.

Var. with leaves rather long and deeply toothed. Same distribution.

13. B. JUNCEA Desf.

Subglaucous, glabrous herb, perennial. *Stems* from the collum many, terete, rush-like. *Leaves* sessile, linear, almost nerveless, entire or minutely toothed, distant. *Heads* terminal, solitary or few-corymbose, pediceled. *Involucre* hemispherical, its scales lanceolate, rigid, acute, inner ones linear and smaller. *Achenes* glabrous, 5–10-costate. *Pappus* copious, many-seriate.

(Brazil); Patagon., by Rios Negro and Sta. Cruz; Port Rawson. By J. B. Hatcher at Rio Chico de Sta. Cruz, March, 1897, female (determined by O. Hoffmann, who writes, "De Condolle writes 'folia integerrima.' They are not always so. Also Baker says in the *Flora Brasil.*, 'folia interdum minute dentata.' We have collected examples like yours from Sello.") The Hatcher specimen has the leaves remotely serrate. Plant nearly a meter high, heads corymbed, outer involucre scales nearly ovate, all chestnut colored, with whitish margins. Achenes long, ovoid, compressed, 10-striate, rounded at top where the fine, silky, abundant pappus is inserted; pappus more than twice as long as the involucre.

14. BACCHARIS MAGELLANICA Pers. (including *B. cuneifolia* Lam.).

Low undershrub, glabrous-viscous, with angled *branches*. *Leaves* sessile, crowded, coriaceous, evergreen, obovate-cuneate, obtuse, semientire, with some obscurely 3-toothed. *Heads* solitary, sessile on ends of the branches. *Involucre* ovate, its scales ciliate-fimbriate. *Achenes* glabrous, striate.

Magellan; Fuegia passim, abundant at Ushuaia; Falklands; Patagon., by Golfo de San Jorge; at Puerto Deseado; by Hatcher at head of Rio Chico de Sta. Cruz, Feb. 9, 1897, the male plant. N. Patagon., by Lago Nahuel-huapi. (See note to *B. patagonica.*)

15. B. MELANOPOTAMICA Speg.

Small, glabrous undershrub, with slender, sulcate, 1-headed *branches*. *Leaves* alternate, lanceolate or spatulate-linear, sessile, pectinately spinulose-toothed. *Heads* subcorymbose. *Involucral* scales 4–5-seriate, lanceolate, acute, their margin pallid.

(Argentina); N. Patagon., high places along Rio Negro; on Rio Grande (Dusén, Jan., 1896).

16. B. MICROPHYLLA Kunth. (non DC.).

Branching, glabrous shrub, slightly viscid, with angulate *branches*. *Leaves* subsessile, cuneate, apically tridentate, coriaceous, 1-nerved. *Female heads* axillary, shortly pediceled. *Involucral* scales subsquarrose. acutish.

(Peru); N. Patagon., near Rio Negro.

(*B. montevidensis* is *Vernonia nitidula* Less., fide DC. Prodr., v, 29; and *Index Kewensis.*)

17. B. NANA D. Don.

Glabrous, dwarf undershrub, 15–30 cm. high; much branching; the *branches* slender, wingless, sulcate. *Leaves* small, sessile, linear, plane, 1-nerved, entire or nearly so. *Heads* many-(30-)flowered, solitary on ends of branches. *Involucre* campanulate, its scales few-seriate, rigid, caducous, the inner ones acute. *Pappus* whitish.

(Argentina); N. Patagon.

18. B. PATAGONICA Hook. & Arn.

Glabrous shrub, with angulate *branches*, the younger ones viscid. *Leaves* sessile, ovate-cuneate, 1-nerved, thick, punctate-rugose, 3–7-toothed above. *Peduncles* shorter than the leaves, axillary, solitary or in pairs, bracteate, *1-headed.* *Involucre* of both sexes campanulate, its outer scales oval, nerveless; the inner oblong, green-nerved; all obscurely fimbriate.

Patagon., most characteristic; Fuegia *passim;* E. and W. Magellan; in shubberies of N. Patagon.; southward chiefly as a steppe-plant.

"Plant much larger than *B. magellanica* Pers., not viscid. Leaves sinuate-lobate towards the summit, opaque, and often turning black in drying; otherwise very near *B. magellanica*." (J. D. Hooker.) Alboff states that the characters of *B. magellanica* at Ushuaia and Navarin are so intermediate between those of these two species as to suggest that they are all only one species. In this and in *B. magellanica* the stomata are functionless because of the thickening of their enclosing cells. (Dusén.)

19. BACCHARIS PINGRÆA DC.

Stem suffruticose, branching, laxly leafy. *Leaves* linear to linear-lanceolate, entire or serrate, acuminate, punctulate, as are the branches. *Corymbs* lax, many-headed. *Involucre* ovate-subglobose; its scales in the males oblong-lanceolate, mucronate; in the females the innner acuminate. *Achenes* glabrous.

(California to Chili and Argentina); N. Patagon., by Rio Negro and Rio Chubut.

B. PINGRÆA ANGUSTISSIMA DC.

Leaves very narrow-linear, entire or rarely denticulate.

N. Patagon., by Rio Negro.

20. B. PINNATIFIDA Klatt.

Stem branching freely from the base; branches erect, striate, very leafy, glabrous. *Leaves* sessile, decurrent, pinnatifid, their segments narrow-linear, mucronulate. *Heads* terminal, subcorymbose. *Involucre* campanulate, its scales lanceolate, acute, subreflexed, membranaceous-margined, nerve green.

Patagon.

21. B. PLATENSIS Spreng.

Glabrous, viscous shrub. *Branches* opposite, the younger striate-angulate. *Leaves* opposite, oblong-cuneate, apically dentate, coriaceous; the inferior obovate-oblong, mid-ones oblong, upper linear, subentire. *Heads* sessile, glomerate, interruptedly spicate on the branches and branchlets. *Involucre* ovate, its scales oval, subacute, as long as the pappus. Lower *leaves* 5 cm. by 12 mm.; the broader leaves are 3-nerved, the narrower 1-nerved.

(S. Brazil); N. Patagon., by Rio Negro.

22. BACCHARIS ROSMARINIFOLIA Hook. & Arn.

Branching shrub, densely leafy. *Leaves* linear, rather obtuse, thick-coriaceous, entire, margin revolute, with the *branchlets* resinous-glandular. *Corymbs* terminal, densely few-headed. *Involucre* oval, its scales elliptic-oblong, the outer ones obtuse, the inner subacute. *Achenes* glabrous.

(Chili); N. Patagon., by Lago Nahuel-huapi.

23. B. RUFESCENS Spreng. (*B. baldwini* Hook. & Arn.)

Heads subsessile, glomerate, spicate, leafy, terminating the branches. *Leaves* cuneate-linear, 3–1-toothed above the middle, rarely entire, 12–25 mm. long, 2–4 mm. broad. *Heads* androgynous, ovate-oblong; females subcylindric; in both sexes 6 mm. long; (allied to *B. paucidentata* DC., hemispheric and smaller).

(Brazil; Argent.); Patagon., by Rio Negro.

24. B. SAGITTALIS DC. (Less.).

Fruticulose; 3-*winged*, the wings plane, remotely interrupted. *Leaves* linear-lanceolate, acute, 14–18 mm. long, shorter than the internodes. *Heads* in a continuous or interrupted, terminal spike. *Involucre* campanulate-ovate, its scales obtuse in the male, in the female acute, the innermost acuminate. *Achenes* glabrous.

(Chili); W. Patagon.; Chubut, by Teka-choique.

25. B. SALICIFOLIA Pers.

Shrub, over 2 meters tall, with spongy wood. *Branches* not winged. *Leaves* lanceolate-linear, serrate, 3-nerved, resinous. *Corymbs* terminal.

N. Patagon., by Rio Negro to Rio Chubut, and in valley of Rio Colorado; widely spread over temperate S. Amer. The wood is used by the Indians to strike fire by friction.

26. BACCHARIS SERRULATA Pers.

Leaves subglabrous, ovate-lanceolate, with a broader base, 3-nerved, acutely serrulate, petiolate. *Corymb* branching, terminal. *Stem* firm, 30–90 cm. high. *Pappus* rufescent.

(Brazil); Patagon.

27. B. SUBULATA D. Don.

Glabrous annuals, with terete, smooth or striate *stem* and *branches* 15–60 cm. long. *Leaves* erect, subcarnose, alternate, remote, linear-subulate, acute, nerveless, entire or serrate, canaliculate in time of drought. *Heads* solitary, terminal, subcorymbose. *Involucre* campanulate-hemispherical, *its scales purple-colored*, all ovate, acuminate, narrowly scarious-margined.

(Buenos Ayres); N. to S. Patagon.

Two varieties, one with entire leaves and involucral scales, the other with serrate leaves and erose scales.

(*B. tenella*, sub *Heterothalamus.*)

28. B. TRIMERA DC.

Undershrub, branches with 3 *wings*, which are interrupted at places. *Leaves* reduced to mere acute scales. *Heads* glomerate, in interrupted spikes. *Achenes* oblong, glabrous. *Involucral* scales of the male heads obtuse or acute, of the female acuminate; outer scales all acute.

(S. Brazil.)

B. TRIMERA VISCOSISSIMA Speg.

Low, lax-cespitose. *Branches* slender, 3-costate, subalate. *Leaves* crowded and longer upwards, obtuse, linear (5 by 1 mm. above). Plant viscous.

N. Patagon., by Rio Negro.

29. B. ULICINA Hook. & Arn.

Branching shrub, the *branches* erect, striate, glabrous. *Leaves* narrow, 1–1.5 mm. broad, subulate, finely mucronate, entire and often pinnatifid. *Heads* solitary, terminal on the short, often corymbose branches. *Involucre* subcampanulate, its scales linear-subulate, with a green nerve.

N. Patagon., common along Rio Negro; also in Bolivia, Argentina, etc., "paste" and "yerba de los ovejas"; cespitose and very green, and valuable for feeding sheep.

BACCHARIS ULICINA HUMILIS.

On bare parts of the pampas.

B. ULICINA MULTIFIDA (Gris.) O. Ktze.; see supra, p. 797, *Vittadinia multifida* Gris.

30. B. UMBELLIFORMIS DC.

Glabrous shrub. *Leaves* obovate, obtuse, cuneate, sessile, plane, toothed, 1-nerved, not punctate. *Heads* pediceled, umbellate at the ends of the branches. *Scales* of the male, campanulate involucre scarious at the margin, densely ciliate. (Chili); N. Patagon., by Lago Nahuel-huapi.

31. B. URVILLEANA Brongn.

Shrub, with lanceolate, opposite! *leaves.* ("Description not yet published," DC. Prodr., vii, p. 282, 1838; nor yet, 1905. Fig. in t. 61, Brongn. Bot. Voy. Coq. See Plate XXXI at the end of this volume.)

Magellan.

22. PLUCHEA Cass.

Herbs (or sometimes in the tropics shrubs), with alternate, dentate *leaves* and small heads of tubular *flowers* in terminal, corymbose *cymes.* *Involucre* narrow or broad, its scales appressed, several-seriate, imbricate, green. *Receptacle* naked. *Outer-flowers* 3-cleft, pistillate; inner 5-cleft, perfect or sterile. *Anthers* basisagittate, tailed. *Pappus* 1-seriate, scabrous-bristly. *Achenes* angulate.

(Fig. in Eng. and Prantl, iv, 5, p. 176, C–G.)

Species 30, widespread in warm and temperate regions.

P. QUITOC DC.

Annual. *Leaves* sessile, very decurrent, oblong or lanceolate, callous-denticulate. *Corymb* compound, subfastigiate. *Involucral* scales lanceolate, subacute. A sweet, *aromatic* herb.

(Central and S. Brazil, in swamps); N. Patagon., by Rio Negro.

23. TESSARIA Ruiz & Pav. (*Pleuropappus* Nutt., non Less.)

Shrubs resembling *Pluchea*, hoary or silky, but with *involucral* scales scarious, the inner long and bent outwards. *Perfect* flowers less numerous (1–10). Species 4, California to N. Patagon.

TESSARIA ABSINTHIOIDES DC.

Branches and leaves appressed, hoary-silky. *Leaves* lanceolate, acuminate both ways, entire or sometimes with coarse, sharp teeth, here and there incised; underneath nervose-reticulate. *Involucre-scales* glabrous, acute. *Disk* 7–8-flowered.

(Chili, by rivers); N. Patagon., rare at Carmen de Patagones on Rio Negro.

24. PSILOCARPHUS Nutt.

Small, tomentose, annual herbs, with alternate, entire *leaves*. *Heads* small, subglobose, terminal or axillary; disciform, heterogamous, the disk-flowers sterile. *Pappus* none. *Achenes* oblong, not ribbed.

Species 3, California to Patagon.

P. GLOBULIFERUS (Bert. sub. *Micropus*) Speg.

Snowy-tomentose. Stems branching from the base, diffuse. *Leaves* oblong-linear, the floral broader, obtuse. *Heads* terminal and lateral. *Involucral* scales plane, unarmed, obtuse. *Chaff* on receptacle ovate, compressed, tomentose about the achenes, making a hoary globe.

S. Patagon., by Rio Sta. Cruz.

25. MICROPSIS DC.

Small, woolly annuals, with alternate, entire *leaves* and small heads in *glomerules* at the ends of the branches or crowded in the axils. *Heads* disciform, heterogamous. *Involucre* shorter than the receptacular chaff, with few, woolly, hyaline scales. Receptacle cylindraceous, chaffy. *Corollas* filiform in the margin, tubular inwards. *Anthers* subcaudate; style-branches obtuse. *Pappus* none, or fugacious. *Achenes* small.

Species 5, Eurasia and N. Amer. and the following:

M. NANA DC.

Stems numerous, not 3 cm. long. *Leaves* obovate, obtusely mucronate, appressed-villous, crowded upwards, or as if whorled in the axils.

(Chili); N. Patagon., on grassy turf by Rio Negro.

26. CHEVREULIA Cass.

Dwarf, cespitose or slender herbs, with opposite or rosulate, entire *leaves*, hoary underneath at least; and mediocre or small, disciform, heterogamous *heads*, some sessile, others peduncled. *Involucre-scales* few-seriate, imbricate, scarious, shorter outwards. *Repectacle* naked. *Anthers* basi-sagittate, with slender tails. *Styles* in disk, with slender, truncate branches. *Pappus* finely setose, briefly connate at base. *Achenes* ending in a long rostrum.

Species 7, S. Amer.

1. CHEVREULIA LYCOPODIOIDES DC.

Leaves linear-oblong, obtuse, 4 mm. long. *Heads* terminal, solitary, oblong. *Involucral* scales lanceolate, acuminate, hairy at the base.

Falklands, in dry grassy places; Fuegia.

2. C. STOLONIFERA Cass.

Stem branching, short, stoloniferous. *Leaves* subradical, linear-oblong or obovate, obtuse, entire, mucronate, appressed-hairy. *Scape* longer than the leaves. *Involucral* scales obtuse.

(Chili, at Valdivia; also in Tristan d'Acunha I.); N. Patagon., by Rio Negro.

(Fig. in Eng. & Prantl, iv, 5, p. 184, G, H.)

27. ANTENNARIA Gaertn.

Woolly, perennial herbs, with alternate and basal *leaves*, and small discoid, diœcious or polygamous *heads*, usually capitate or corymbose. *Involucral* scales scarious, imbricated, the outer shorter. *Receptacle* not chaffy. *Staminal* flowers, with scanty pappus of clavate setæ; fertile flowers, with copious, capillary bristles. *Achenes* oblong.

Species 15, mostly in mountains of Eurasia, Australia and extratrop. N. and S. Amer.

(Fig. in Eng. & Prantl, iv, 5, p. 184, C–E.)

A. MAGELLANICA Sch. Bip.

From subligneous root. *Plant* arachnoid, woolly. *Leaves* in radical tufts and cauline; ovate-spatulate, subacute, entire; narrower upwards. *Glomerules* with golden-woolly scales, the inner thin, rounded, glabrous, shorter than the pappus.

Magellan, specimen in Gray Herb., by R. O. Cunningham; S. Patagon., by Hatcher at Rio Coy, "variable, low, 30–60 cm. high"; N. and E. Fuegia, by Dusén, "a rather rare steppe plant."

28. FACELIS Cass.

Annual herbs, branching from the ground, with *leaves* alternate, narrow, entire, emarginate, hoary underneath. *Heads* rather small, axillary or apically aggregated; disciform and heterogamous; the females in the ray, and few fertile, tubular, hermaphrodite in the disk. *Involucre* ovoid, its scales several-seriate, the inner long-scarious; outer woolly; outermost leafy. *Receptacle* naked. *Anthers* basisagittate and tailed. *Style-branches* truncate. Pappus-setæ 1-seriate, plumose, basiconnate as a ring. *Achenes* oblong, beakless.

Species 3, Andine.

F. APICULATA Cass.

Leaves linear, apically truncate or emarginate, the nerve apiculately produced. *Heads* crowded.

(Fig. in Eng. & Prantl, iv, 5, p. 184, J. K.)

(S. Brazil; Argent.); N. Patagon., by Rio Negro.

F. BRACHYCHÆTA (*brachyantha?*).

S. Patagon., high up by Rio Sta. Cruz.

29. ACHYROCLINE Less.

Erect undershrubs, mostly woolly, with panicled *cymes* of small, narrow, few-flowered, yellow to whitish, disciform *heads;* 3–6 filiform, female flowers in the ray, and 1–2 tubular, hermaphrodite flowers in the disk; all fertile. *Receptacle* naked or with few pales. *Anther-tails* small. Style-branches truncate. *Pappus-setæ* scabrous, falling singly.

Specimens 16, Mexico to Brazil, etc., also in Africa and Madagascar.

A. SATUREIOIDES (Lam.) DC.

Branches woolly. *Leaves* sessile, linear, spreading, scarcely acute; the cauline crowded, those on the branches distant, webby above, woolly underneath. *Heads* apically crowded, cylindric, glabrous; their scales oblong, obtuse.

(Fig. in Eng. & Prantl, iv, 5, p. 184, L.)

(Brazil, etc.); N. Patagon., by mouths of Rio Negro.

30. LUCILIA Cass.

Gray, woolly herbs, allied to *Gnaphalium*. *Heads* few, rather large, elongated. Involucres many-seriate, their scales long, scarious. Receptacle naked. *Flowers* all fertile, the females very slender, surrounding, and more numerous than, the hermaphrodites. *Achenes* silky, some of the hairs often elongate, like an extra-pappus.

Species 25, S. Amer.

L. ACUTIFOLIA Cass.

Leaves lanceolate-linear, acute, tomentose. *Pappus-setæ* finely serrulate.

(Fig. in Eng. & Prantl, iv, 5, p. 184, M.)

(Andes of Peru and Chili); N. Patagon., by Rio Negro.

31. GNAPHALIUM Linn. Cudweed, Everlasting.

Chiefly woolly herbs, with alternate *leaves* and discoid *heads* of pistillate and perfect flowers. *Involucral* scales several-seriate, their points dry. *Receptacle* naked. *Anthers* tailed. *Pappus* single, of capillary bristles. Achenes oblong or obovate, not ribbed.

Species 120, widely distributed. (J. D. Hooker, in *Flora Antarctica*, questions the specific validity of many of the species.)

KEY TO THE SPECIES.

A. Glabrous.
  b. Decumbent, 4 cm. Leafy at base, less so above. Heads capitate, large. *antarcticum*.
  b2. Undershrub, woolly upwards. Leaves small, obovate-rotund. Heads 3–5, terminal. *serpyllifolium*.
A2. Hoary, erect or ascending. Lower leaves broad, spatulate, upper narrower.
  b. Upper leaves subdecurrent. Floral leaves short, linear. Heads crowded, spiciform. *spicatum*.
  b2. Upper leaves not decurrent. Heads in compound, axillary spikes. *axillare*.
A3. Hoary-villous.
  b. Erect annual. Leaves linear or broader, acute. Spike leafy, terminal, and axillary glomerules. Scales purplish-tipped. *filagineum*.
  b2. Slender, leafy stem. Leaves spatulate-linear-oblong. Heads 3–5, sessile in upper axils, as an interrupted spike. Scales dark-tipped. *spiciforme*.
A4. Glandular-tomentose, suffruticose, with short branches. Leaves oblong-spatulate, acute. Heads in compound, apical glomerules. Scales whitish. *frigidum*.
A5. Woody, branching, with a tomentose cross terminating the branches. *lycopodium*.
A6. Leaves green above, tomentose underneath. Heads crowded apically.
  b. Leaves ovate-oblong, attenuate-petiolate, acuminate. Heads crowded at the top. *mucronatum*.

*b*2. Leaves linear spatulate, the upper oblong. Heads sessile in axils and spicate above.
  c. Scales purplish upwards. *purpureum.*
  *c*2. Scales apically rufous. Leaves oblong-spatulate, mucronate. *purpureum-sphacelatum.*
*b*3. Leaves dimorphous, the basal subspatulate, straight, the cauline falcate, crowded. Heads sessile in upper axils and densely spicate. *falcatum.*
*b*4. Erect or diffuse annual. Lower leaves subobovate, obtuse; upper leaves narrower, acute, semi-amplexicaul. Glomerules cymose. Scales acuminate. *luteo-album.*
*b*5. Stunted, 5 cm., with offsets. Leaves oblong-linear, lowest subspatulate. Heads 5, sessile, cymose. *magellanicum.*
*A*7. Woolly-tomentose.
b. Procumbent, 6 cm. tall. Heads few.
  c. Leaves subovate, sparse. *affine.*
  *c*2. Leaves sessile, linear-oblong. Stems filiform; flowers yellowish. *supinum.*
*b*2. Ascending. Leaves spatulate-lanceolate to linear, amplexicaul. Terminal glomerules. *montevidense.*
*b*3. Erect, simple.
  c. Leaves linear-lanceolate, decurrent. Corymbs terminal, dense.
    d. Leaves woolly on both surfaces. Heads paniculate. Scales pale yellow. *cheiranthifolium.*
    *d*2. Leaves velvety above, tomentose underneath. Heads compactly crowded. Scales citrinous. *citrinum.*

1. GNAPHALIUM AFFINE d'Urv.

Stem slender, herbaceous, procumbent, only 6 cm. high, much branching and leafy. The flowering branches ascending, sparsely leafy. *Heads* few, terminal, aggregate, narrowly cylindrical. *Involucral* scales lanceolate, acuminate. Base of pedicels and bract-like leaves immersed in wool.

Spegazzini notes 3 leading forms of this species: (1) *pusillum, leaves* ovate, obtuse; *scapes* with 1–3 leaves and minute, crowded heads; (2) *parvulum, leaves* narrower, acutish; *scapes* naked or with strict leaves, heads more lax; (3) *medium, leaves* obovate to subspatulate, apically rounded; *scapes* slender, heads minute, bracteolate, crowded to interruptedly spicate.

Patagon., Chubut; Magellan; Fuegia; Navarin I.; Falklands.

2. G. ANTARCTICUM Hook. f.

Low, glabrous. *Stem* decumbent 3–5 cm. high, leafy at base, sparsely leafy above. *Heads* subcapitate, rather large. *Involucre* scales lanceolate, acuminate, scarious, glabrous, pale brown. *Achenes* glabrous. Pappus subpilose at base.

Falklands, concealed in grass.

3. GNAPHALIUM AXILLARE Remy.

Erect, subsimple; stem and leaves hoary. *Basal leaves* spatulate, mucronulate; cauline linear-mucronulate, non-decurrent; the lowest bearing in their axils a spike of heads. *Spike* short-peduncled, long and interrupted, compound. *Involucre* ovate-oblong, the outer scales oval, acute; the inner oblong-linear, green at base, yellowish and obtuse at apex.

S. Patagon., by Dusén at Puerto Madryn; Golfo de San Jorge.

4. G. CHEIRANTHIFOLIUM Lam.

The erect, simple, herbaceous *stem* and the *leaves* on both surfaces hoary-woolly. *Leaves* decurrent, linear-lanceolate, acute, undulate-crisp, floral branches panicled. *Heads* terminally crowded, semiglobose-campanulate. *Involucral* scales scarious, shining, pale yellow, oblong-linear, scarcely acute. (Central flowers hermaphrodite.)

(Montevideo, etc.); S. Patagon., by Rio Sta. Cruz.

5. G. CITRINUM Hook. & Arn. (= *cheiranthifolium* fide Ind. Kew.).

Herbaceous, erect, tomentose. *Leaves* very decurrent, linear-lanceolate, acute, velvety above, white-tomentose underneath. Corymbs terminal; *heads* crowded, ovate-campanulate. *Involucral* scales oblong, obtuse, citrinous, shining.

(Chili); Patagon., Golfo de San Jorge; Magellan.

6. G. FALCATUM Lam.

White-woolly, with many simple *stems* arising from the base. Radical *leaves* subspatulate, obtuse, straight; cauline crowded, falcate-arcuate. *Heads* sessile in the upper axils, and crowded in a *spike*. *Involucral* scales linear, glabrous, red-tipped.

Magellan.

7. G. FILAGINEUM DC.

Villous-hoary, erect, ascending, herbaceous annual. *Leaves* sessile, linear to linear-lanceolate, acute, villous-hoary both surfaces. *Spike* leafy, terminal, interrupted. *Glomerules* crowded at the axils, much shorter than the leaf. *Involucral* scales lanceolate, acute, purplish.

(Brazil); Patagon., along Rio Negro and Rio Chico de la Sta. Cruz.

8. Gnaphalium frigidum Wedd.

Glandular-tomentose, from a woody, branching rhizome, cespitose. *Stems* or branches short, decumbent or diffuse, and ascending, glomeruliferous at apex. *Leaves* oblong-spatulate or lanceolate, acute, not (?) decurrent. *Heads* densely glomerate, glomerules solitary. *Involucre* hemispherical, scales scarious, obtuse, sordid-whitish. Female flowers very many; disk-flowers hermaphrodite, about 18, with *pappus-setæ* coarsely thickened.

(Bolivia, etc., at snow-level); S. Patagon., by Hatcher in Cordilleras, Feb. 16, 1897.

A specimen in Gray Herbarium from Peruvian Andes at 14,000 feet (4,200 meters) above sea-level, is marked "var. *foliis angustioribus.*"

9. G. luteo-album Linn.

White-woolly, annual herb, with erect, simple or diffusely branching stem. Lowest *leaves* obovate or oblong-spatulate, obtuse; cauline semi-amplexicaul, oblong-linear or lanceolate, acute. *Heads* glomerate-cymose. *Involucral* scales scarious-hyaline, stramineous, acuminate.

(Cosmopolitan); N. Patagon., in sandy and damp places.

10. G. lycopodium Pers.

Stem woody, branching, the tops of the branches with thin, dense tomentum, forming a cross. ("Is it *Lucilia* or *Oligandra?*" DC.)

Magellan.

11. G. magellanicum Sch. Bip.

Stunted, 5 cm. high, with very short offsets. *Leaves* oblong-linear, the lowest subspatulate; villous-tomentose on both surfaces. *Heads* 5–6, sessile, cymose. *Involucre* generally half as long as the pappus; its scales glabrous, weak, straw-brown, ovate, oblong, obtuse, striate, subincised above. *Achenes* cylindraceous, sparsely hirt. The male plants unknown.

Magellan; at Punta Arenas by the seaside.

12. G. montevidense Spreng.

Stem herbaceous, ascending, simple, woolly. *Leaves* sparse, amplexicaul, spatulate-lanceolate, linear, acutish, plane, woolly. *Heads* sessile in terminal glomerules; involucres yellow.

(Montevideo); Chubut, in rocky places.

13. GNAPHALIUM MUCRONATUM Phil.

Perennial. *Stems* many, white-woolly. *Leaves* green above, hoary-tomentose underneath, obovate-oblong, attenuate to a kind of petiole, acuminate. *Heads* crowded at top of the stems. *Involucral* scales apically fuscous.

(Chili); W. Patagon., by Rio Palena; E. Patagon., near Rio San Martin. (Dusén.)

(*G. mucronatum* Berg. is *Helichrysum mucronatum* Less. of S. Afr.)

14. G. PURPUREUM Linn. (*P. americanum* Mill.)

Herbaceous annual or biennial, with simple, erect stem, tomentose. *Leaves* linear-spatulate; upper ones oblong, tomentose underneath, webby-glabrate on upper surface, sessile, or the lowest narrowed to a petiole. *Heads* sessile, subspicate in the upper axils and terminally. *Involucral* scales scarious, yellowish-brown or purplish, lance-oblong, acutish, the outer woolly at the base. *Achenes* roughish. *Pappus* bristles united at the base.

(Tropics and subtrop.); about Ajo (S. E. Arg.).

Patagon., by Rio Sta. Cruz; Magellan; Fuegia.

15. G. PURPUREUM SPHACELATUM (H.B.K.).

Silky-woolly. *Leaves* oblong-spatulate, mucronate. *Heads* crowded in the upper axils, in a rather interrupted leafy spike. *Involucral* scales linear, apically rufous.

S. Patagon., by Rio Sta. Cruz.

16. G. SERPYLLIFOLIUM Remy.

Suffruticose and glabrous below, with many slender stems; woolly upwards. *Leaves* small, obovate-rotund, the upper subspatulate, obtuse, mucronulate, non-decurrent, woolly both sides. *Heads* terminal, few (3–5). *Involucral* scales linear, acute, sphacelate.

(Argentina); S. Patagon., by Rio Sta. Cruz.

17. G. SPICATUM Lam.

Stem erect or ascending, hoary. *Leaves* narrowly oblong-spatulate, the lower broader, the upper subdecurrent, glabrous or webby on the upper surface. Floral leaves shorter, linear. (Fig. 97.)

(Quito; Brazil); S. Patagon., Falklands; Fuegia. "Abundant and variable."

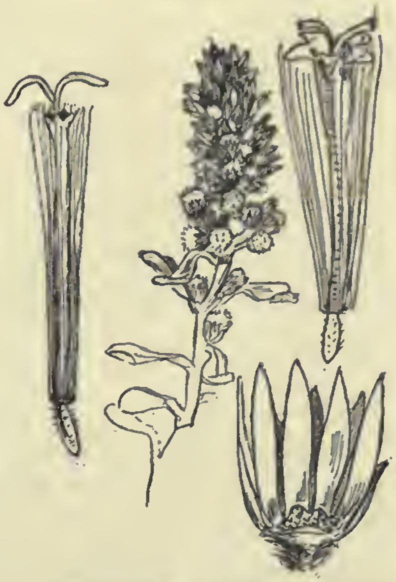
Var. with all the *leaves* narrowed to a long petiole and the flowers crowded in subsessile *heads*. Chonos Archip.

18. Gnaphalium spiciforme Sch. Bip.

Perennial. *Stems* several, herbaceous, a span high, ascending, slender, leafy, ending in an interrupted spike. *Leaves* spatulate, linear-oblong, hoary, webby-villous. *Heads* 3–5, sessile in the upper axils, cylindraceous. *Involucral* scales oblong-lanceolate, obtuse, blackish brown, 15-flowered, of which 12 are filiform females, and 3 are hermaphrodite, tubular and 5-toothed.

Magellan, by Punta Arenas.

Fig. 97.



Gnaphalium spicatum. — Spike, slightly reduced; also ray-flower (on left), disk-flower (on right), and receptacle with involucre (below). (From *Flora antarctica.*)

19. G. supinum Linn. Dwarf Cudweed.

Low, herbaceous perennial, 3–7 cm. high, with simple, filiform *stem*, and sessile, linear, oblong, webby-tomentose *leaves*. *Heads* few, subsessile amid the upper leaves, oblong. *Involucral* scales oblong, acuminate. *Flowers* yellowish. *Pappus* bristles distinct. *Achenes* puberulous.

Alpine regions of Eurasia and N. Amer.

S. Fuegia, about Ushuaia, at elevations.

G. supinum subacaule Wahl.

Stem shorter than the leaves, and *heads* concealed by the leaves.

32. ADENOCAULON Hook.

Herbs, glandular especially at the inflorescence. *Stems* tall, sparsely branching, with few or no leaves upwards. Basal leaves long-petioled, white-tomentose below. *Heads* small, in a large panicle, disciform, heterogamous, 4–7 females surrounding as many sterile hermaphrodites. *Involucre* broad, its scales few (5), subequal, herbaceous. Receptacle naked. *Anthers* basally entire or minutely toothed. *Styles* of female flowers with short, broad branches. *Achenes* costate, gland-bearing. *Pappus* none.

Species 2, *A. bicolor* Hook. in Himalaya, Japan, and N. Amer., and the following. A case of discontinuity. (Fig. in Eng. & Prantl, iv, 5, p. 206, G–L.)

ADENOCAULON CHILENSE Less. (*A. lechleri* Sch. Bip.)

Leaves largely oval, rounded or subcordate at their base, slightly toothed, or entire at their margin.

(Chili); Patagon., Chubut; Magellan; S. Fuegia, at Ushuaia.

33. PARTHENIUM Linn.

Mostly hairy, or hoary herbs or shrubs, with alternate *leaves*, and small corymbose *heads* of both tubular and radiate, white or yellow flowers. *Involucre* broad, its scales 2–3-seriate, appressed, subequal. Chaff surrounding the disk-flowers. *Ray-flowers* about 5, their ligules short, 2-lobed. Disk-flowers sterile. *Anthers* basi-entire. *Achenes* compressed, bearing the persistent rays and *pappus* of 2–3 awns.

Species 10, N. Amer. to northern part of S. Amer.

P. HYSTEROPHORUS Linn.

Herbaceous annual, hispid below, hoary at top. *Leaves* variously bipinnatipartite. *Involucral* scales acute. *Pappus-scales* oval-oblong, obtuse, membranaceous. (Fig. in Eng. & Prantl, iv, 5, p. 114, M, N.)

(Tex., by Mexico and W. Indies to S. Amer.; also Mauritius.) N. Patagon., near Rio Negro.

34. AMBROSIA Linn. American Ragweed.

Monœcious or diœcious branching herbs or shrubs, with small *heads* of green flowers, the staminate in spikes or racemes, the pistillate solitary or few in the axils. Pistillate heads 1-flowered, with 4–8 spines, without petals or pappus. Staminate heads many-flowered, often with filiform chaff, scarcely synantherous. (*Flowers* so far *reduced* as to have lost the chief characters of *Compositæ*, the female flowers being naked and not strictly capitate, and the males not having the anthers united.) (Fig. in Eng. & Prantl, iv, 5, p. 222.)

Species 12, chiefly American.

1. AMBROSIA SCABRA Hook. & Arn.

Stem scabrid. *Leaves* pinnate, callous-scabrid on the upper surface, hirsute-pubescent underneath; segments linear-lanceolate, acute, the lower incised-pinnatifid. *Racemes* solitary, sometimes becoming a leafy panicle.

(Buenos Ayres, etc., in pastures); N. Patagon., by Rio Negro.

2. A. TENUIFOLIA Spreng.

Pilose; lower *leaves* thrice-pinnatifid, with linear segments. *Racemes* solitary, copiously paniculate. Male involucre with subentire orifice; female involucre hard, sparsely tubercled.

Annual herb, 60–90 cm. high, copiously branching. (Argentina); N. Patagon., by Rio Negro.

35. XANTHIUM Linn. Cockle-bur.

Rough, monœcious annuals, with small *heads* of greenish, discoid flowers, the male-heads many-flowered, clustered at the ends of the branches, the females axillary, with 2 apetalous flowers. Males involucrate by distinct scales, the filaments united but anthers separate, the receptacle chaffy. Female heads with closed involucre covered by *hooked spines*. *Corolla* none. *Pappus* none. Species 5, widely distributed. (Fig. in Eng. & Prantl, iv, 5, p. 223.)

1. X. AMBROSIOIDES Hook. & Arn.

Spinose, tomentose-hoary. *Stem* procumbent. *Leaves* bipinnatifid, the segments oblong, obtuse, marginally revolute. Female head solitary, its spines slender, setiform, patent, apically hooked; the terminal spine stout and straight.

It has the foliage of *Ambrosia* with the fruit of *Xanthium*. A *var.* has the female head with no stout spine.

N. Patagon. in fields by Rio Negro.

2. X. ITALICUM Moretti. (*X. macrocarpum* DC.)

Leaves cordate, cuneate in the sinus, 3-lobed, toothed. *Fruiting involucre* ovate-oblong, hispid between the spines and at the base of the beaks, which are apically hooked.

N. Patagon., banks of Rio Negro.

3. XANTHIUM SPINOSUM Linn.

Strong, 3-partite *spines* at the base of the leaves, which are 3-lobate, minutely puberulous above, hoary along the nerves and underneath. *Spines* yellow, 25 mm. long.

(Eur. and N. Amer.); N. Patagon.; the roasted fruits are used for making a drink like coffee.

36. ECLIPTA Linn.

Branching herbs, with opposite *leaves* and small peduncled, terminal and axillary *heads* of tubular and radiate, whitish flowers. *Involucre* broad, its scales usually 2-seriate, herbaceous. *Receptacle* with awn-like chaff subtending the achenes. Ray-flowers fertile; disk flowers perfect, mostly fertile, and mostly 4-toothed. *Style-branches* obtuse or with triangular tips. *Achenes* thick, with rough sides. *Pappus* none, or a few teeth.

Species 4, chiefly tropical.

E. ALBA Hassk.

Rough annual, 60 cm. high. *Leaves* nearly lanceolate, denticulate or entire, narrowed to a sessile base, or some petioled. *Rays* short. *Achenes* 4-toothed.

(Fig. in Eng. & Prantl, iv, 5, p. 227, E–H.)

(Trop. Amer., naturalized in U. S.); N. Patagon., by Rio Negro.

37. WEDELIA Jacq.

Rough herbs or undershrubs, with opposite *leaves* and mediocre heads, pediceled at the ends of branches or axillary. *Flowers* yellow, radiate, all usually fertile. *Involucral* scales 2-seriate, the outer green. Chaff embracing the flowers. *Anthers* basi-entire or sagittate. *Style-branches* with acute appendages. *Achenes* thick, laterally compressed, or in the ray triquetrous; glabrous or hairy or tubercled. *Pappus* mostly cup-like or with caducous awns. (Fig. in Eng. & Prantl, iv, 5, p. 230, A.)

Species 60, in warm climates.

W. BUPHTHALMIFLORA Ltz.

Many erect *stems* from the woody root; branching decussately or sparsely, with gray cortex, 50 cm. high. *Leaves* narrow, lanceolate, entire, or broader and serrate, 3-nerved, revolute edged, 6 cm. long. *Flower-heads* solitary, terminal, rather large, above the leaves. *Involucral* scales 4-seriate, the inner larger, passing into the receptacle-pales. *Achenes* compressed, not winged, silky. *Pappus* of 3 pales, scarcely united, lacerate above. Some short neuter flowers.

N. Patagon., by Rio Negro.

38. SPILANTHES Jacq.

Branching herbs, with opposite *leaves* and rather small, long-peduncled, discoid and radiate *heads*, or rayless. Involucre with green scales, 2-seriate. *Receptacle* convex or elongated, chaffy about the achenes. Anthers basitruncate. *Style-branches* of the disk long, often tufted. *Achenes* 3-sided (ray), or compressed. *Pappus* of 1–3 or more awns.

Species 30, in warm regions. (Fig. in Eng. & Prantl, iv, 5, p. 237.)

S. ARNICOIDES DC. (*S. helenioides* Hook & Arn.)

Stem creeping, ascending, hirtellous, sparsely branching. *Leaves* crowded at base, opposite, attenuate-cuneate to a long petiole, elliptical or ovate-lanceolate, subdentate, smooth. *Peduncle* long, 1-headed, erect, sparsely puberulous; *head* subglobose. *Involucral* scales about 12, oval-oblong, obtuse. *Ligules* 12–15, three times as long as the involucre. *Achenes* of ray abortive, of disk ciliate, 2-awned. *Corolla* intense yellow.

(Brazil); N. Patagon., a campos plant; "nim-nim," its root is chewed to allay thirst.

S. ARNICOIDES LEPTOPHYLLA (DC.).

N. Patagon., by Rio Negro.

39. VERBESINA Linn. (including *Ximenesia* Cass.).

Mostly pubescent or scabrid herbs, with *heads* small to mid-sized, and broad *involucre* with few-seriate scales. *Receptacle* convex, chaffy, its chaff enclosing the disk-flowers. Ray-flowers ligulate, white, pistillate or neuter. *Style-branches* of disk with acute appendages; the disk-achenes flattened. *Pappus* of 1–3 subulate awns, sometimes with intermediate scales.

Species 50, American, from southern United States to Patagon.

VERBESINA AUSTRALIS (Hook & Arn.) Baker. (*Ximenesia microptera* DC.)

Annual, with stems not winged. *Leaves* alternate, dorsally white-tomentose; lower leaves deltoid-petiolate, sharply serrate, the upper sessile, basi-auriculate. *Heads* few, lax-corymbose. *Ligules* 10–12, large, showy. *Achenes* narrowly winged; awns short.

(Argentina, etc.); N. Patagon.; common along Rio Negro.

40. THELESPERMA Less.

Glabrous herbs, with opposite, linear or finely dissected *leaves* and long-peduncled, mid-sized *heads* of both tubular and radiate flowers, or rayless. *Involucre* broad, 2-seriate, the outer scales short, spreading, the inner connate half-way, their tips scarious. *Receptacle* chaffy. *Ray-flowers* neuter, yellow. Anthers basiobtuse. *Style-branches* obtuse. *Achenes* papillose on the back, wingless. *Pappus* of 2 retrorsely hispid awns or none.

Species 7, Amer., from southern United States to Patagon.

1. T. MEGAPOTAMICUM O. Ktze. (Spr. sub *Bidens*).

Leaves all bipinnatifid, linear-filiform, glabrous. *Heads* mostly in pairs, peduncled, erect, discoid. *Involucre* colored, as long as the disk. Achenes?

(Brazil; Argentina); N. Patagon., common along Rio Negro.

2. T. SCABIOSOIDES Less.

Herb from woody root, 60 cm. high, of habit of *Scabiosa columbaria gramuntia* DC. Glabrous, with many *stems* which are rigid, divided from below into a subtrichotomous panicle, with spreading branches and long peduncles. *Leaves* decussate, at least below, finely dissected; their segments linear to 16 mm. long; passing to upper, simple, sessile, linear leaves. *Heads* erect, homogamous. (Fig. in Eng. & Prantl, iv, 5, p. 240, E–F.)

(Uruguay, etc.); N. Patagon., by Rio Negro.

41. MADIA Molin. Tarweed.

Erect annuals, with entire *leaves*, and glandular, often scented pubescence. *Heads* mostly radiate and heterogamous. Involucral scales 1-

seriate, carinate, embracing the outer achenes. *Disk-flowers* tubular, 5-cleft, their styles appendaged. *Anthers* basiobtuse. *Achenes* of ray obovate-oblong, often laterally compressed and incurved. *Pappus* none.

Species 8, in Western N. Amer., and to Chili, etc.

MADIA SATIVA Molin.

Lower *leaves* opposite, upper alternate, semiamplexicaul, oblong, entire. (Fig. in Eng. & Prantl, iv, 5, p. 249, C.)

(Chili, where an oil is expressed from its seeds, and it is cultivated); Patagon.; Magellan; N. and E. Fuegia (Dusén, "a steppe plant; rather rare in Fuegia").

42. FLAVERIA Juss.

Herbs often yellowish, with opposite, narrow leaves and heads with few, to only 1, *flowers*, all fertile. *Involucral* scales 2–4, long, subequal, sometimes with small, outer scales. *Receptacle* naked. Ray-flowers with very short ligules. Anthers basiobtuse. *Style-branches* of disk truncate. *Achenes* 8–10-costate. *Pappus* none. *Corollas* yellow.

Species 8, of which 2 are spread over the whole tropics, especially in W. Amer. One of these, *F. contrayerva* Pers. (fig. in Eng. & Prantl, iv, 5, p. 259), is used as a vermifuge. *F. australasica* Hook., of tropical E. Australia, is allied to species in S. Amer., W. Indies and Florida.

A species (undescribed) belonging to S. Argentina may be expected in N. Patagon.

43. VILLANOVA Lag.

Diffuse, glandular, pubescent herbs, with at least the lower *leaves* opposite, dissected; and with small or midsized peduncled *heads* of yellow flowers *panicled or corymbose*. Ray- and disk-flowers usually fertile. *Involucre* broad, its scales few, subequal, green, subtending the ray-flowers. *Receptacle* small, naked. *Anthers* basisagittate. Style branches acute. *Achenes* cuneate-oblong, truncate, triquetrous, glabrous. Pappus none.

Species 8, Colorado to Patagon.

V. PINNATIFIDA Lag.

Annual, with ternatisect *leaves*, opposite below, alternate upwards, their segments pinnatifid.

Magellan.

44. ACTINELLA Pers.

Chiefly herbs, with alternate or radical *leaves*, entire or pinnately few-lobed. Heads terminating the branches, mostly radiate, heterogamous, yellow-rayed, resinous. *Involucre* broad, its scales 2–3-seriate, subequal, rigid. *Receptacle* convex, naked. *Anthers* entire or basisagittate. *Style-branches* dilated-truncate, pencilled. *Achenes* silky. *Pappus* of 5–12 awned, hyaline pales.

Species 17, N. Amer.

1. A. ANTHEMOIDES (Cass. sub *Hymenoxys*) Gray. (*Actinea anthemodes* O. Ktze.)

Heads discoid, homogamous. *Involucral* scales obovate-subspatulate. Not well known; referred by DC. and A. Gray to *Hymenoxys*, a subgenus, having double involucre, the outer short and connate. (Fig. in Eng. & Prantl, iv, 5, p. 256, R.) ("Achenial hairs bicuspidate," Speg. This character is common in many genera. See A. Gray's Revision of Compositæ on genus *Townsendia.*)

N. Patagon., along Rio Negro.

2. A. HETEROPHYLLA (Juss. sub *Actinea Cephalophora* L.) H. & A.
A. HETEROPHYLLA LATIFOLIA O. Ktze.

Leaves narrowly lanceolate, the upper broader, 4 mm., entire.

Patagon.

45. GAILLARDIA Foug.

Pubescent herbs, with alternate or basal *leaves,* and large, peduncled, radiate *heads*, the rays cuneate, variously colored, or wanting. Involucre broad, 2–3-seriate, herbaceous-tipped. *Receptacle* convex or globose, often bristly. Teeth of disk-flowers with jointed hairs. *Anthers* basisagittate. *Style-branches* appendaged. *Achenes* turbinate, 5-costate, villous. *Pappus-scales* 6–12, awned, 1-nerved, exceeding the achene.

Species 12, chiefly in Central and N. Amer.

1. G. DONIANA Gris. (*Cephalophora doniana* H. & A.)

Hoary, suffruticose. *Leaves* linear, entire, acute. *Involucral* scales appressed. *Heads* radiate; ray-corollas 3-lobed, of same color with the disk. *Pappus-pales* 6–8, rather short. *Achene* yellow-silky.

Argentina.

2. GAILLARDIA DONIANA DISCOIDEA Gris.

Radiate; but by the setose receptacle and the style-branches having a long, hirt appendage allied to *G. scabiosoides.* Plant 30 cm. tall. Leaves narrowly or broadly lanceolate-elliptical, acuminate, entire, 5 cm. by 4 cm.

(Argentina); N. Patagon.

3. G. MEGAPOTAMICA (Spr.) Baker.

Stems inconspicuously pilose. *Leaves* lanceolate, entire. *Heads* discoid, solitary, long-peduncled. *Involucral* scales lanceolate, shorter than the disk. *Pappus-pales* 9–10, lanceolate, 2–3 times larger than the achene.

The largest species: "Tschoïke catschu," Rhea-grass, its infusion is sudorific.

(S. Brazil and Argentina, near rivers); N. Patagon. and by Bahia Blanca.

4. G. SCABIOSOIDES Griseb. (= *G. megapotamica?*).

Heads discoid, solitary, long-peduncled. *Leaves* oblong, deeply pinnatifid; the segments lanceolate, entire or sparsely toothed. *Involucral* scales lanceolate, shorter than the disk. *Pappus-pales* 9–10, lanceolate, 2–3 times exceeding the achene. (Leaves varying, sometimes entire.)

(Argentina); N. Patagon.

5. G. SCABIOSOIDES RADIATA.

Stem 22 cm. high, leafy at base. *Leaves* bipinnatisect, ovate in outline, to 4 cm. long. *Ray* exsert, its ligules trifid.

(Argentina, common by rivers); N. Patagon.

46. TAGETES Linn. South American Marigold.

Glabrous herbs, with *oil-glands* in the involucres and in the leaves. *Leaves* mostly opposite and mostly pinnately dissected. *Flowers* yellow. *Involucre* cylindraceous, 1-seriate, connate. Receptacle naked. Ray-flowers entire or 2-cleft. *Anthers* basiobtuse. *Style-branches* truncate-tufted or briefly appendaged. *Achenes* linear, attenuate with a basal callus. *Pappus-pales* 5–6, differing.

Species 20, Mex. and S. Amer., often cultivated in gardens.

(DC. Prodr. gives as the generic character, "leaves opposite or alternate," and several of its species are cited with alternate leaves. Benth.

& Hook. and also Eng. & Prantl, say "leaves opposite," apparently by an oversight, as Benth. & Hook. refer to *T. glandulifera* as in the genus.)

TAGETES GLANDULIFERA Schrk.

Heavy-scented annuals, with erect stem and short branches. *Leaves* alternate, pinnatisect; their segments linear-lanceolate, acuminate both ways, serrate, 6–8 pairs and a terminal; upper leaves subdecurrent, the lower lobes of each aristate and small. *Heads* corymbose-fasciculate, about 7 of them ending a branch. *Ligules* 3, small.

(S. Brazil; Argentina; Chili); N. Patagon., in cultivated places by Rio Negro.

47. DYSODIA Cav.

Mostly annual, strong-scented, branching herbs, with dissected, glanduliferous *leaves* and small, radiate *heads* of yellow flowers. *Involucral* scales 1-seriate, partly united, mostly with small outer scales. *Receptacle* pubescent. *Rays* short. *Anthers* basally entire or toothed. *Style-branches* long, hirsute. *Achenes* obpyramidal, 3–5-angled, striate. *Pappus-scales* 10 or more, parted into bristles.

Species 34, Southern and Western U. S. to Mex., and 1 in S. Amer.

D. BELENIDIUM (DC. sub *Hymenatherum* as a genus).

Erect undershrub, with basal *leaves* opposite, pinnatipartite, having 5 pairs of lateral lobes and a longer terminal, all subulate, rigid. *Pedicels* long, 1-headed, naked. *Involucral* scales united throughout. *Pappus-scales* 10–20, ending in 1–7 awns.

(Chili; Argentina); N. Patagon., in rocky places by Rio Negro.

48. ANTHEMIS Linn. Camomile.

Herbs or undershrubs, often scented, with pinnatifid or dissected, alternate *leaves*, and rather large, peduncled *heads* of yellow disk-flowers, and white or yellow rays ending the branches. *Involucre* hemispheric, its scales imbricated, several-seriate, scarious-margined, shorter outwards. *Receptacle* convex, with chaff subtending the disk-flowers. *Anthers* basi-obtuse. Style-branches in the disk truncate. *Achenes* oblong, ribbed. *Pappus* none, or a ring.

Species 100, Europe and Mediterr. region; a few introduced to Amer. (Fig. in Eng. & Prantl, iv, 5, p. 271.)

ANTHEMIS COTULA Linn.

Glabrous, glandular, fetid annual. *Leaves* finely dissected into subfiliform spreading segments. Ray-flowers 10–18, white, neutral.

(Eur., naturalized in N. and S. Amer.); Patagon., at Rawson by mouth of Rio Chubut (Dusén). Near RR. Gallegos and Sta. Cruz.

49. ACHILLEA Linn. Yarrow.

Herbs, with erect, leafy *stem*, the *leaves* alternate, finely dissected or pinnatifid, or serrate; and terminal *corymbs* of small heads, with yellow disks and white or pink rays. *Involucral* scales few-seriate, imbricating, smaller outwards. *Receptacle* with subtending chaff. *Anthers* basi-obtuse. *Style-branches* truncate. *Achenes* oblong to obovate. *Pappus* none.

Species 80, in N. Temperate regions, especially of Old World.

A. MILLEFOLIUM Linn.

Leaves finely dissected into narrow, pinnatifid segments, tomentose or glabrous. *Involucre* ovoid.

(N. Temp. regions of both Hemispheres, also in S. Austral. and N. Zeal.); Magellan (Dusén).

50. COTULA Linn.

Low, cespitose or creeping herbs, with alternate, pinnately divided or toothed *leaves;* and rather small, heterogamous, disciform *heads. Involucre* broad, 2-seriate. *Receptacle* naked. Corollas of outer flowers conical or none; of disk 4-merous. *Anthers* basi-obtuse. *Style-branches* truncate or obtuse. *Achenes* compressed. *Pappus* none, or auriculiform.

Species 40, in temperate and warmer parts of Old World; also with the section *Leptinella*, including 18 species, in the Southern Hemisphere.

(LEPTINELLA, subgenus.)

Receptacle at length conical; the female flowers several-seriate, the achenes 2-costate or 2-winged.

Species 18, in Australia, New Zeal. and Chatham I. and the following which are most of them, common to Australia and Western America.

1. C. ACÆNOIDES (Hook. & Arn. sub *Leptinella*).

Stoloniferous, subvillous. *Leaves* spatulate, pinnatifid, with oval segments, here and there incise-toothed; the lower smaller, the upper greater and thin segments approximate. *Involucral* scales 5, in 1 series, scarious-margined. "No ligulate or marginal female flowers in ours" (H. & A.). "= *C. reptans*" (Index Kewensis).

(Australia); Fuegia, Ushuaia; Cape Horn; Staaten Id.; W. Patagon., at Cape Tres Montes.

Var. *major.* Less villous; *leaves* subglabrous, lobes distant. Head larger. At Valdivia. (*C. reptans* Benth. occurs in Australia and Tasmania, as also the var. *major.*)

2. COTULA AUSTRALIS (Less.) Hook. f.

Slender, much branched, 5–10 cm. high, flaccid, glabrous, hairy or woolly at nodes. *Leaves* 12–25 mm. long, pinnatifid once or twice; the lobes linear, entire. *Heads* minute, 2 mm. broad, on long, slender peduncles. *Involucral* scales 2-seriate, linear-oblong, membranous. Ray-flowers 3-seriate, pediceled; no corolla. *Achenes* obovate, winged, the wing apically bifid, glandular on inner side. Disk-flowers tubular, 4-toothed, glandular.

(N. Zeal., Tasmania; Australia; S. Africa; Tristan); Patagon. (?).

3. C. HOMBRONI Franchet.

"One-third the size of *C. scariosa* and much more velvety." *Leaves* with indistinct petiole, pinnatipartite, with segments contiguous, oboval, crenate or entire, long-prostrate, rooting. *Heads* 6 mm. in diameter; *involucral* scales glabrescent, 1–3 outer ovate-deltoid, the inner orbiculate, black-tipped.

Magellan, by Hombron.

4. C. PEDUNCULARIS (DC.).

Small, glabrous, prostrate, creeping. *Leaves* petiolate, sinuate-pinnatifid, sharply toothed, the segments very narrow. *Peduncles* terminal, solitary or corymbed. *Involucral* scales imbricating, orbicular, pale-margined. Ray-flowers bilabiate.

(Quito); Patagon., by Savatier.

[C. PLUMOSA.

Hirsute, with long, lax hairs. *Leaves* long-petiolate, linear, oblong, obtuse, tripinnatifid, the ultimate segments subulate. Terminal and lateral peduncles solitary, as long as the petiole. *Involucre* 1-seriate. Female corollas cordate-ovate. *Flowers* not glandular.

Found in N. Zeal., Auckland I. and Kerguelen; not yet found in Amer. "One of the few plants common to Lord Auckland's Group and Kerguelen's Land which do not exist in Fuegia." (J. D. Hooker.)]

5. COTULA REPTANS Benth.

Diœcious, stoloniferous, subvillous. *Leaves* petiolate, pinnatisect; the segments oval-oblong, subarcuate, incised-toothed in places; the lower leaves smaller. *Heads* long-peduncled. Male involucral scales 5–6, in 1 series; female 20, in 3 series.

S. Patagon., Gregory Bay, RR. Gallegos and Sta. Cruz.

(*C. reptans* Boj. is *Sphæranthus cotuloides* of Madagascar.)

6. C. SCARIOSA (*Leptinella scariosa* Cass.) Franch.

Stem prostrate, rooting here and there, the leafy branches villous. *Leaves* glabriusculous; the lowest linear, petiole-form at their base, at their apex lyrate-pinnatifid. *Peduncle* scapiform, villous. *Rays* ligulate.

(S. Chili); E. and W. Magellan to Cape Horn; chiefly in forest regions.

51. ABROTANELLA Cass.

Glabrous, dwarf perennials, with small, alternate, entire, fleshy *leaves*, and small, terminal *heads* sessile among the leaves, solitary or crowded, disciform and heterogamous. *Involucre* campanulate, 2–3-seriate. *Receptacle* naked. Female corollas 3–4-toothed; hermaphrodites 4-cleft. *Anthers* basiobtuse. *Style-branches* short, truncate. *Achenes* glabrous, dorsally compressed or 4-angular. *Pappus* none, or coroniform, or 4 teeth or bristles.

Species 12, N. Zeal., Auckland I.; Campbell I.; Australia (Victoria); Rodriguez I.; Fuegia.

1. A. EMARGINATA Cass.

Moss-like herb. *Leaves* imbricately crowded, broad, scarious-edged, bifid at apex. *Heads* solitary, terminal.

Magellan to Cape Horn; abundant in the Falklands.

2. A. LINEARIFOLIA A. Gray.

Small, lax-cespitose, with linear or broader, entire *leaves*, the upper as long as the peduncled head. *Involucral* scales oval, 2–3-nerved. Female flowers 2–3; hermaphrodites 6–8; all fertile. *Achenes* glabrous, long-obovate, 4-costate. *Pappus* truncate, 4-toothed or 4-awned.

Fuegia, near Cape Horn.

3. ABROTANELLA SUBMARGINATA A. Gray.

Pulvinate-cespitose. *Leaves* many, linear, callous-margined, spreading, obtuse. *Heads* solitary, few-flowered. *Involucral* scales 1-nerved. *Achenes* obscurely 3–4-nerved. *Pappus* coroniform.

Magellan; Fuegia, by Orange Harbor.

52. ARTEMISIA Linn. Wormwood.

Odorous herbs or shrubs, often hoary, with alternate *leaves*, and small discoid *heads* of greenish or yellowish flowers. *Involucral* scales few-seriate, shorter outwards. *Receptacle* without chaff. *Anthers* basi-obtuse. *Style-branches* truncate. *Achenes* oblong, 2-ribbed or striate, usually with a superior disk. *Pappus* none. (Fig. in Eng. & Prantl, iv, 5, p. 281.)

Species 200, chiefly of the Northern Hemisphere.

A. MAGELLANICA Sch. Bip.

Herbaceous, 1–many-stemmed; *stems* leafy, spicate, racemose. *Leaves* pinnatipartite, segments 2–3, or only 1 pair; oblong-lanceolate, acute, with resinous dots. *Raceme* perfoliate, simple or branching below. *Heads* axillary upwards, subsessile, erect, many-flowered. *Involucral* scales rounded, their margin pale-yellow, scarious. *Achenes* ovate, cuneate, glabrous. Pappus none.

(Chili; Argentina); Patagon.; Chubut; Rio Sta. Cruz; Magellan; E. Fuegia (Dusén, "a steppe-plant").

53. MELALEMA Hook. f.

Low, cespitose herb, with alternate, spatulate, entire, crowded *leaves*, tomentose underneath; and solitary, sessile, discoid *heads* among the upper leaves. *Involucral* scales many-seriate, silvery-tomentose, apically sphacelate. *Receptacle* naked. *Anthers* basi-obtuse. *Style-branches* linear, truncate. Marginal flowers female, tubular. *Achenes* oblong, glabrous. *Pappus* setose.

Species only 1, viz:

MELALEMA HUMIFUSUM Hook. f.

Prostrate, emitting long fibers; with leafy branches.

Fuegia, on mountain top near Blossom Bay.

54. CULCITIUM Humb. & Bonp.

Perennial herbs, with radical or alternate, usually entire *leaves;* and mediocre or large, yellow, monogamous, discoid *heads*. *Involucre* broad, its scales many-seriate, smaller outwards. *Receptacle* naked. *Anthers* basally entire or subentire. *Style-branches* truncate, pencilled. *Achenes* oblong-linear, many-striate, glabrous. *Pappus-setæ* copious.

Species 14, Andine. (Fig. in Eng. & Prantl, iv, p. 292.)

1. C. MAGELLANICUM Homb. & Jacq.

Entirely silky-tomentose. *Leaves* radical, linear-lanceolate or narrower, long, acute, appressed-hairy, the margins revolute. *Scapes* with 1 head: the involucre woolly.

S. Patagon., Gregory Bay, Magellan; by Hatcher at Cabo Negro, Jan. 13; chiefly in the steppes; Fuegia, Ushuaia, Navarin I.

2. C. SESSILE Speg.

Pulvinate-cespitose, 5–10 cm. high, 20 cm. broad, appressed-silvery-silky. *Leaves* crowded, linear, entire, revolute-margined; their apex attenuate, acute, with a setula; their base subattenuate and spreading to a villous periclad. *Heads* solitary on the branches, sessile amid the leaves, campanulate, erect. *Involucral* scales woolly, shorter than the disk. *Corolla* ochroleucous. Stigmas ferruginous.

Patagon., by Golfo de San Jorge.

55. SENECIO Linn. Groundsel.

Plants of varying habit, usually herbs, in temperate climates. *Heads* radiate (or sometimes rayless). *Involucral* scales 1–2-seriate, erect, subequal, or with small, outer bracteoles. *Receptacle* naked. *Anthers* basi-obtuse, or nearly so. *Style-branches* often spreading, truncate, pencilled. *Achenes* 5–10-costate. *Pappus-setæ* copious, fine, entire to barbellate.

Species 1,200, cosmopolitan; with great variety as to size of heads, etc. (*S. jacobæa* L. is the troublesome ragweed of Britain, not the American ragweed; *S. vulgaris* L. is the British groundsel, the favorite of the canary-bird; *S. johnstoni* Oliv. of tropical Africa is a tree; and *S. humillimus* Sch. Bip. of the Andes is low and cespitose.)

KEY TO THE SPECIES.

A. Monocephali. Heads solitary on the scape or branches.
  b. Heads discoid.
    c. Herbs.
      d. Glabrous, with scape. Leaves fleshy, linear-spatulate, toothed. Involucral tips sphacelate. *kingii.*
      d2. Low, many-stemmed perennial, tomentose when young. Leaves linear, the upper few, setaceous. Involucre green. *magellanicus.*
    c2. More or less shrubby.
      d. Leaves glabrous-warty, narrow, broader toward apex. Branches nearly naked. Heads calyculate. Flowers 1 cm. long. *verruculosus.*
      d2. Leaves glabrous on underside, very narrow, smaller upwards. Low, cespitose. *miser-tehuelches.*
      d3. Somewhat webby; leaves linear.
        e. Upper leaves broader, 3-lobed. Heads "homogamous." *allœophyllus.*
        e2. Branches naked above. Leaves often 2-toothed. *beaufilsii.*
      d4. Hoary undershrub. Leaves crowded, spatulate, with a long sheath. *vaginæfolius.*
      d5. Leaves crowded at base, densely glandular, small, linear. Branches scape-like. Heads broad, sparsely calyculate. Flowers 6 mm. long. *hatcherianus.*
  b2. Heads radiate.
    c. Stems or branches scapiform upwards.
      d. Fleshy rhizome, sending up leafy shoots and leafless scapes. Leaves spatulate, petiolate. Heads large. *kurtzii.*
      d2. Low, tomentose; stems leafy below, scapiform above. Head calyculate.
        e. Leaves linear, scarious, broader upwards. *tunicatus.*
        e2. Leaves about oblong, black-tipped. *pœppigii.*
      d3. Glabrous. Leaves spatulate, trifurcate, some fasciculate. *trifurcatus.*
    c2. Heads terminal on branches.
      d. Branches few-leaved to naked upwards.
        e. Webby. Leaves linear-spatulate. Heads small. *alboffiana.*
        e2. Subtomentose. Leaves linear, entire, obtuse; upper fewer, acute. *argenteus.*
        e3. Woolly. Leaves linear, spatulate, 3-toothed. *ceratophyllus.*
        e4. Glabrous. Leaves narrow-linear. Head long-stalked, calyculate. Achene hispid. *laricifolius.*
        e5. Glabrous, branches many, leafless above. Leaves subspatulate, 3–5-cleft. Ligules scarlet. *hypsophilus.*
        e6. Silky. Leaves narrow-linear, crowded at base of branches, these nearly leafless above.
          f. Involucral scales 20, acuminate. *morenonis.*
          f2. Involucral scales about 15, acute, tomentose. *sericeo-nitens.*

e7. Puberulous. Leaves linear, entire, the upper few small. Involucral tips subsubulate. *polyphyllus.*
d2. Branching profuse. Woolly shrubs.
e. Leaves narrow, deeply 3-cleft. *eightsii.*
e2. Leaves cuneate, 3-lobed, etc. *darwinii.*
e3. Leaves linear, entire. *chilensis.*
d3. Branching dichotomous, tomentose. Leaves fleshy, linear; with axillary fascicles. *fasciculatus.*
d4. Erect, glabrous, with large heads on leafy branches. Leaves linear, to obovate, entire. *littoralis.*
A2. *Oligocephali.* Heads usually 1–3, corymbed.
b. Discoid.
c. Tomentose perennial, with 1–8 mid-sized heads. Leaves oblong, dark-tipped. *micropifolius.*
c2. Shrubs or undershrubs.
d. Low, with glabrous, fleshy, pectinate leaves. Stem long. *hauthalii.*
d2. Low, branching, with small, sessile leaves and heads. *nordenskjoldii.*
d3. Low, viscous. Leaves narrow-spatulate, wavy. *miser.*
d4. Erect, woolly. Leaves spatulate, entire. *leucomallus.*
b2. Radiate.
c. Glabrous herb. Leaves obovate, basi-cuneate. Heads 3. *cuneatus.*
c2. Glabrous shrub. Leaves subcylindrical. *pachyphyllus.*
c3. Woolly shrub. Leaves sublanceolate, revolute. *falklandicus.*
c4. Hoary. Stem scape-like. Leaves oval, fleshy.
d. Achenes hispid. *gillesii.*
d2. Achenes white-pubescent. *gillesianus.*
A3. *Subcorymbosi.* Heads few, corymbed.
b. Discoid.
c. Herb. Tomentose. Leaves oblong, dark-tipped. *micropifolius.*
c2. Undershrubs.
d. Glandular, leafy upwards; leaves subsphacelate, toothed. *dumosus.*
d2. Subglabrous, erect. Bracteolate.
e. Leaves very narrow, revolute. Heads long-stalked. *longipes.*
e2. Leaves broad-linear, entire. *arnotti.*
d3. Webby to silvery. Leaves linear.
e. Leaves mostly crenate. Achenes puberulous. *psammophilus.*
e2. Leaves fleshy, naked upwards. *xanthoxylon.*
d4. Webby. Leaves linear-oblong, entire. Heads broad, calyculate. (*patagonicus*) *microcephalus.*
d5. Leaves webby underneath, green above, linear, entire, fleshy. Branches woolly. Heads calyculate. *lechleri.*
b2. Radiate.
c. Herbs.
d. Glabrous.
e. Leaves subspatulate, cuneate-petiolate, few. *cuneatus.*
e2. Leaves pinnatifid. Corymbs long-stalked. Achenes silky. *delfini.*

*d*2. Silky. Leaves narrow-linear, crowded at base. *palenæ.*

*c*2. More or less fruticose.

d. Glabrous. Leaves oblong-cuneate, toothed apically. Branches naked upwards. *hirthi.*

*d*2. Glabrous and calyculate.

e. Leaves linear, pinnatifid. Calyculus long. *chrysocomoides.*

*e*2. Leaves broader, pinnatipartite; segments 6–8 pairs. *desideratus.*

*e*3. Leaves linear-subulate, sometimes pinnatifid. Calyculus short. *subulatus.*

*e*4. Leaves linear, entire, attenuate. Pedicels long. Involucre black-tipped, floccose. *linariæfolius.*

*e*5. Leaves obovate to oblanceolate, pinnatifid. Involucre green. *dusenii.*

*d*3. Leaves crowded, pinnatipartite. *pinnatus.*

*d*4. Tomentose.

e. Leaves broad-linear.

f. Leaves acute, with recurved edges. Heads stalked, rather large. *andersoni.*

*f*2. Leaves obtuse. Heads 1–few. *flaccidus.*

*f*3. Leaves subpectinate, some with stipelliform lobes. *stipellatus.*

*e*2. Leaves broad-ovate, deeply pinnatifid. Heads broad, woolly. *candolleanus.*

*A*4. *Corymbosi.* Heads numerous, corymbed.

b. Discoid.

c. Herbs.

d. Woolly. Leaves ovate, crenate, the upper sessile, entire. Heads umbellately stalked. *candidans.*

*d*2. Glabrate, puberulent. Leaves pinnatifid. Achenes hoary. *vulgaris.*

*c*2. More or less fruticose.

d. Glabrous. Heads bracteolate.

e. Leaves about oblong, auricled. Involucre-tips floccose. *lævicaulis.*

*e*2. Upper leaves oblong-panduriform. Heads small, broad. *subpanduratus.*

*d*2. Hoary, becoming glabrous. Leaves linear, entire. *neæi.*

*d*3. Webby. Tall. Leaves oblong, revolute. *hyadesii.*

*b*2. Radiate.

c. Herbs.

d. Glabrous, bracteolate.

e. Leaves pinnatifid. *glaber.*

*e*2. Leaves rhombo-hastate, narrowing upwards. *hualtata.*

*d*2. Leaves glabrous-pubescent, subovate, the lower petiolate. Heads broad. *acanthifolius.*

*d*3. Lower leaves 2, oblong, petiolate; upper amplexicaul, somewhat webby. Heads rather large. *fistulosus.*

*d*4. Tall, woolly. Leaves lance-oblong, the upper sessile. Heads large, calyculate. *pulcher.*

*c*2. More or less fruticose.

d. Glabrous.
e. Leaves linear, entire or 2-toothed. Bracts crowded, setaceous. *ibari.*
e2. Leaves pinnately lobed. *incisus.*
e3. Leaves large, broad, pinnatifid, the upper amplexicaul. Tall. Heads mid-sized. *auriculatus.*
d2. Hoary-tomentose.
e. Leaves linear.
f. Branches becoming naked, white. *albicaulis.*
f2. Low. Silky tomentose when young. *sericeus.*
f3. Leaves fascicled, revolute-margined. Heads small, constricted. *danyausi.*
e2. Tall. Leaves oblong, basicordate. Heads large. *smithii.*
e3. Prostrate. Leaves rather narrow, often cuneate, trifid. *darwinii.*
b3. Radiate and calyculate. Shrubs.
c. Glabrous. Leaves linear, entire. *bracteolatus.*
c2. Glaucous-glabrous. Leaves pectinate. Heads tomentose. *ctenophyllus.*
c3. Tomentose. Leaves linear-subulate, entire. *caricifolius.*
c4. Scabrous. Leaves broad-linear. Entire. Heads broad. *limbardioides.*
A5. *Paniculati.* Heads numerous, panicled.
b. Discoid. Appressed, silky shrub. Leaves linear. *doeringii.*
b2. Subdiscoid. Glabrous herb. Leaves broad-lanceolate, basicordate. *otites.*
b3. Radiate.
c. Woolly herb. Leaves fleshy, subreniform, glabrate on upper surface. *websteri.*
c2. Tomentose shrub, with white branches. Leaves pinnatifid. Heads twice as long as broad. *leucostachys.*
A6. Various.
b. Involucral scales 1-seriate, with membranous, sublacerous margins, shorter than the flowers.
c. Branching from the base. *laseguei.*
c2. Prostrate, branching, tomentose. Leaves oblong, linear, sessile, entire. *exilis.*
b2. Heads 1–8 on the branches, radiate, smooth, calyculate, leaves linear-filiform. *mendocinus.*
b3. Large cottony leaves: odor of celery. Rest unknown. *candicans.*

1. SENECIO ACANTHIFOLIUS Homb. & Jacq.

Corymbose. Erect, glabrous or pubescent herbs. *Stem* hollow, simple, sulcate. Lower *leaves* long-petioled, oblong-ovate, basicordate, margins lobed, the lobes coarsely crenate; petioles winged, sheathing at base. Upper leaves sessile, semi-amplexicaul. Heads radiate. *Involucre* broad, its scales 1-seriate.

Magellan and Fuegia, to Cape Horn, passim. Handsome and abundant in the woods and by streams, "in steppe-regions and forest-regions of mean moisture."

2. Senecio albicaulis Hook. & Arn.

Compound *corymb.* Hoary tomentose shrub, at length naked; with white, smooth branches. *Leaves* linear, obtuse, somewhat fleshy, their margins entire or rarely pinnatifid. *Involucre* cylindric to campanulate, shorter than the flowers; its scales about 14, linear-acute, subsphacelate at the apex.

N. Patagon., by Rio Negro.

3. S. alboffianus (Alboff sine nomine).

Near *S. miser* Hook. *Heads* solitary on branches. Rhizome long-fibrillose, branching, bearing many stems. *Stems* low, 8–10 cm., naked and scarred at the base, densely leafy and branching upwards, the branches ending in a 10–15 mm. peduncle and head. *Leaves* linear-spatulate, attenuate-petiolate, entire or toothed near apex; the upper webby to tomentose. *Heads* small, campanulate. *Involucral* scales linear, their margin broad scarious. Flowers?

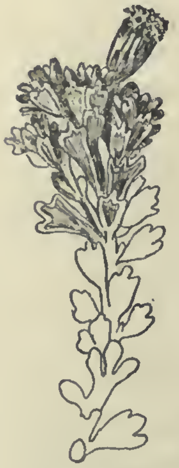
Fuegia, Ushuaia.

4. S. allœophyllus O. Hoffmann.

Branches 1-headed. Undershrub, with smooth, leafy branches. Lower *leaves* linear or narrow-spatulate, entire; upper leaves obovate, broad-cuneate, sessile, 3-lobed at apex, margin revolute, webby at least on under surface. *Heads* on short, terminal peduncles, with a few linear, acute bracts, homogamous. *Involucral* scales oblong, webby at base. Style-branches long, truncate. *Achenes* glabrous. *Pappus* snow-white. (Fig. 98.)

S. Fuegia, on mountains. (O. Nordenskjöld.)

Fig. 98.



Senecio allœophyllus.— Leafy stem and flower-head (after O. Hoffman).

5. S. andersoni Hook. f.

Heads few. *Stem* ascending, laxly woolly. *Leaves* suberect or spreading, linear-oblong or linear-lanceolate, subflaccid, acute or acuminate, entire or apically lobed; margins recurved, woolly. *Heads* rather large, long- and slender-pediceled. *Involucre* broad, its scales linear, arachnoid or smooth, shorter than the disk.

Near *S. patagonicus.*

Magellan, E. and W. Fuegia, and S. Fuegia, by Rio Olivaia.

Var. (1) With the lower leaves broader and lobed.
(2) With leaves linear, entire.
(3) A more woolly form at Ushuaia.
(4) A white-woolly 1-headed form at Ushuaia.

6. SENECIO ARGENTEUS G. Kze.

Branches 1-headed, appressed, sub-tomentose, striate. *Stem* ascending from a woody base. *Leaves* linear, entire, obtuse, the upper fewer and acute. *Involucre* campanulate, scarcely bracteolate, its scales about 20, acute, subustulate. Ligules 25 mm., linear-oblong. *Achenes* hirt-pubescent.

(Chili, on rocky parts); Patagon. (Moreno).

7. S. ARNOTTI Hook. f.

Corymbose, discoid. Erect undershrub, glabrous or obscurely glandular-hairy. Branches erect, leafy, simple. *Leaves* solitary or subfasciculate, coriaceous, broad-linear or oblong-linear-lanceolate, acute, entire, margins revolute, rib underneath puberulous. *Heads* 4–12, broad, with long pedicels and subulate, bracteate leaflets. Involucral scales narrowly linear-lanceolate, acuminate. *Achenes* hispid-puberulous.

Magellan; Fuegia, at Orange Harbor (specimen in Gray Herb.); S. Patagon., by J. B. Hatcher.

S. ARNOTTI DENTATUS.

With coarsely toothed leaves.

8. S. AURICULATUS Alboff.

Corymbose. Tall, to 1–2 m., glabrous, with fistular *stem*, ending in the lax, about 10-headed inflorescence. *Leaves* large, membranaceous; the lower long-petioled; the upper sessile, amplexicaul; broad, oblong-obtuse, subcordate at base, pinnately lobed, the lobes rounded and lobulate, and their sublobes crenate-dentate; the uppermost leaves lance-oblong, acutely toothed. *Petioles* with 2–4 small, amplexicaul lobes; the upper leaves only with large auricles. *Peduncles* rather long. *Heads* mid-sized. *Involucral* scales few, linear, acute. Ray-flowers white.

S. Fuegia, in Navarin I., beautiful.

9. Senecio beaufilsii O. Ktze.

Head solitary, discoid. Small shrub, 50 cm., erect, branching, tomentose in youth, leafy below, rather naked upwards. *Leaves* sessile, linear, entire or rarely 2-toothed, obtuse, margin reflexed. *Involucre* shorter than the disk, 15 mm., campanulate, scales 1-seriate, 12, equal, lanceolate, glabrescent. Bracteoles 2–3, small. *Achenes* glabrous.

S. Patagon., Sta. Cruz ("may be *S. sericeus neæi* with single head." O. Ktze.)

S. beaufilsii toninii O. Ktze.

With very many paucidentate leaves.

Patagon.

10. S. bracteolatus Hook. & Arn.

Heads many, corymbose, crowded, longer than broad, each 12 mm. in diameter. Glabrous shrub, with linear, acute leaves, 25 mm. long, entire. *Pedicels* with numerous bracteoles, which are small, subulate, with white, glandulous tip. *Involucre* ovoid, attenuate, calyculate; its scales about 10, lanceolate, acute, subsphacelate, not as long as the corollas. *Achenes* glabrous.

S. Patagon., by RR. Gallegos and Sta. Cruz.

11. S. candicans DC (non Wall.).

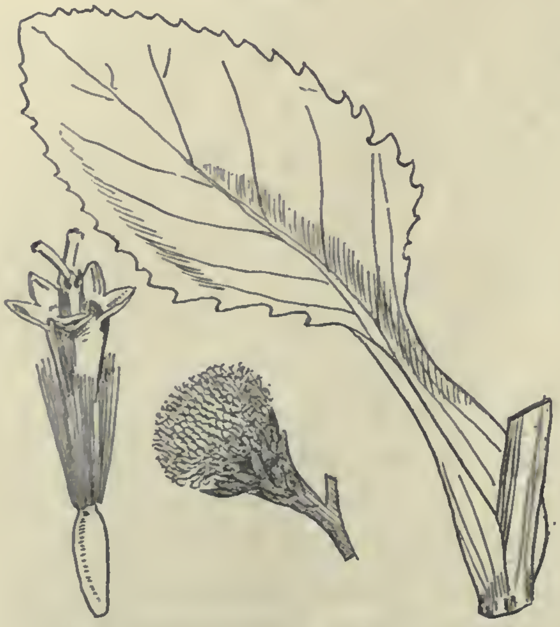
Tall, with odor of celery. *Leaves* large, white, cottony.

Magellan, Bay Ste. Marie (by Heriot, May 7, 1883, only the leaves). Fuegia, in maritime dunes.

12. S. candidans (Vahl) DC.

Corymbose umbel, discoid heads. Erect, simple, woolly herb, with radical and inferior *leaves*, broadly petiolate, ovate, crenate, the upper leaves sessile, elliptic-oblong, entire. *Heads* 7–8; on *long, woolly peduncles, 1-headed. Involucral* scales rather shorter than the disk, narrow, apically glabrate. (Fig. 99.)

Fig. 99.



Senecio candidans.—Leaf: flower-head and one of the flowers. (From *Flora antarctica.*)

Magellan; Fuegia, passim; S. Patagon., by Lago Argentino and Rio Gallegos; Falklands. "Abounds in sandy beaches, chiefly in the eastern parts."

A specimen in the Gray Herbarium has leaves very broad and woolly, the lower leaves subcordate, 12 cm. broad, on a 17 cm. petiole.

13. SENECIO CANDOLLEANUS (Hook. & Arn.) O. Ktze.

Corymbed. *Shrub* white-tomentose, velvety. *Leaves* with flat petiole, broadly ovate in outline, deeply pinnatifid, the segments 6–7, broadly linear, patent, acutish, slender-costate. *Heads* few. *Involucres* broad, densely woolly; the scales about 18, obtuse, shorter than the corolla.

(Argentina); coast of Patagon. "Leaves like a coarse *Artemisia*"; occasionally with some entire.

14. S. CARICIFOLIUS (Hook. & Arn.).

Compact *corymb.* *Shrubby*, white, tomentose at first, less crowded near the flowers, becoming glabrous. *Branches* fasciculate, long. *Leaves* linear-subulate, acute, entire, margin revolute. *Involucre* brown, cylindraceous, calyculate, its scales 10–12, narrow-linear, shining.

(Bahia Blanca); N. Patagon.; S. Patagon., by RR. Gallegos and Sta. Cruz.

15. S. CERATOPHYLLUS D. Don.

Heads solitary on few-leaved, angulate branches. *Undershrubs* webby, with deciduous wool. *Leaves* linear-spatulate, mucronate, plane, 3-toothed at apex, or the uppermost entire. *Involucre* campanulate, its scales subulate, few-bracteolate, not apically sphacelate. *Ligules* about 14, broad-linear.

(Chili; Brazil); Patagon., Magellan.

A var. with larger branches and leaves, the uppermost leaves entire.

16. S. CHILENSIS Less. (*S. ceratophylloides* Gris.)

Heads terminal, solitary, erect. Much branching and ascending. White-tomentose. *Leaves* sessile, linear-entire. *Involucre* campanulate; its scales 1-seriate, narrowly linear, acuminate, non-sphacelate. *Ligules* 4-nerved, 3-toothed.

(N. Patagon., "Leaves rather larger than in Grisebach's description, to 68 mm."); S. and W. Patagon., in Valley of Rio Aysen (Dusén).

17. Senecio chrysocomoides Hook. & Arn.

Corymb of 2–5 heads. Glabrous *shrubs*, 20 cm. high, with fascicled branches. *Leaves* linear, straight, deeply pinnatifid, their segments few (2–4), narrow-linear, short, straight. *Heads* 6 mm. in diameter. *Involucre* ovate, basiacute, long-calyculate, its scales about 10, lax, subulate, shorter than the corollas.

Patagon., on east coast.

18. S. ctenophyllus Phil.

Corymb lax. Glaucous-glabrous *shrubs*, with pectinate *leaves*, the lobes of the lower leaves toothed. *Peduncles* capillary, as long as the bracteolate, tomentose *heads*. *Involucral* scales 10–12, apically sphacelate. *Ligules* about 6. *Achenes* silvery puberulous.

Remarkable for the pectinate form of its leaves and for its tomentose heads.

(Chili, Desert of Atacama); Patagon.

19. S. cuneatus Hook. f.

Corymb 3-headed, with few leaves. Glabrous herb, with ascending, sulcate stem, leafy below. Most of the *leaves* on short branches, obovate-spatulate, basicuneate, attenuate-petiolate, coarsely and irregularly toothed, subcoriaceous. *Heads* radiate, their pedicels 1-leaved at base. *Involucre* broad, its scales 1-seriate, linear.

Magellan.

20. S. danyausii Homb. & Jacq.

Corymbed. Slender undershrub, branching at the base, laxly woolly. *Leaves* fascicled, linear or linear-oblong, subacute, entire or coarsely toothed, margins revolute, woolly especially underneath. *Heads* small, campanulate, constricted in the middle. *Involucral* scales linear-subacute, webby, shorter than the disk.

"Distinguished from *S. micropifolius* DC. by its leaves being often linear-cuneiform, trilobed at apex." (Franchet.)

Magellan; by Hatcher in S. Patagon.; W. Patagon., near Rio Aysen (Dusén); in valley of Rio Gallegos; in Fuegia, at Ushuaia, and passim, as a steppe plant, and the commonest species of this genus.

Var. (1) with leaves entire and larger heads; (2) with leaves toothed and smaller heads.

SENECIO DANYAUSII LOBATIFOLIUS Homb. & Jacq.

Leaves serrate or pinnatifid.

E. Fuegia (Dusén).

S. DANYAUSII PINNATIFIDUS Macl., n. var.

Very like *S. danyausii lobatifolius*, except that the *leaves* are somewhat more deeply serrate or pinnatifid. (Determined by Dr. O. Hoffmann.)

By Hatcher at Rio Sta. Cruz, S. Patagon., Jan., 1897.

21. S. DARWINII Hook. & Arn.

Heads radiate. Low, prostrate shrubs, much branching. *Leaves* woolly, much as in *S. falklandicus*, but generally cuneate and trifid or trilobate or repand-dentate. *Peduncles* long, or heads sessile among the upper leaves.

Magellan, Fuegia.

S. DARWINII ERADIATUS Gray.

Low, condensed, leaves small. *Ligules* none.

Fuegia, at Orange Harbor.

22. S. DELFINI Phil.

Corymb lax, many-headed. Tall, glabrous herb, with simple, fistulous stem. *Leaves* pinnatifid, to 9 pairs, the segments narrow-linear. Lower *peduncles* very long, naked or 1-leaved, 3–5 headed, with bracteolate pedicels. *Heads* 6 mm. in diameter, non-calyculate; *involucral* scales 10. *Achenes* white silky.

Valley of Rio Palena, west of the Cordillera.

23. S. DESIDERATUS DC.

Subcorymbose, few-headed. Glabrous undershrub, with terete branches and sessile, pinnatipartite *leaves*, having linear rachis, and 6–8 pairs of segments, these acute and undivided or bipartite to their base; the uppermost linear, entire. Floriferous branches bracteate. *Involucre* ovate, calyculate, its scales about 10, acute, non-sphacelate. *Ligules* 10, many-nerved; disk-flowers 25–30. *Achenes* slightly hairy.

S. Patagon., by Puerto Deseado; Magellan, Golfo de San Jorge.

24. SENECIO DOERINGII Hier.

Compound, terminal *corymb*, of 20–27 homogamous, yellow, rayless heads. *Shrub* silky, with appressed tomentum. Leafy, terete branches 25 cm. long. *Leaves* sessile, 3 cm. long, 1 mm. broad, acutish or obtusish, linear, thick, entire, margins revolute, midrib prominent underneath, canaliculate above. *Involucre* cylindro-campanulate, with small bracteoles; its scales 13, linear, dorsally subarachnoid, basally subconnate, apically sphacelate. *Achenes* papillose-villous. *Pappus-setæ* white above, barbellate.

Patagon., by Rio Negro, Golfo de San Jorge and Rio Sta. Cruz.

25. S. DUMOSUS Phil.

Corymbs 3-headed, discoid. Glandular-puberulous undershrubs. *Branches* crowded, erect, densely leafy upwards. *Leaves* subsphacelate, the upper half incised-toothed, with 3–5 teeth on each side. *Involucral* scales 20, glabrous, green, pale-margined. *Achenes* glabrous.

East Fuegia.

26. S. DUSENII O. Hoffm., n. sp.[1] (Plate XXX, B.)

Heads radiate, midsized, about 4 on ends of branches. Sparsely branching, finely villosulous undershrub, stem rooting at base and ascending, densely leafy below and sparingly above. *Leaves* obovate or oblanceolate, sessile but with petioliform base; lamina pinnately 3–7-lobed or with callous-tipped teeth, glabrous. Upper leaves passing into the shortly ciliate bracts of the pedicels and calyculus. *Involucre* campanulate, its scales about 15, linear, acuminate, green, marginate, with an obscure nerve, or occasionally 2-nerved, the apex puberulous, equalling the disk.

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[1] SENECIO DUSENII O. Hoffm., n. sp.

Suffruticosa caule basi radicante adscendente parce ramoso, inferne dense superne laxe foliato, ad partes juniores minute villosulo more glabrato; foliis obovatis vel oblanceolatis basi sensim in partem petioli-formem sessilem glaberrimam vel margine pilis paucis septatis minutissimis munitam angustatis, lamina propria glaberrima pinnatim 3–7-lobata vel dentata, dentibus obtusis apice calloso-punctatis; foliis superioribus paulatim in bracteas lineares acutas pedicellorum et calyculi transeuntibus; capitulis mediocribus radiatis ad apices ramosum pauces (circiter 4) fastigiatis, pedicellatis, pedicellis minute villosulis bracteatis, bracteis sicut squamis calyculi margine pilis brevibus paucis ciliatis; involucri campanulati squamis circiter 15 linearibus acuminatis viridibus marginatis, nervo obscuriore (vitta oleifera) vel hinc inde nervis 2 percussis apice minute puberulis disco æquilongis; ligulis involucrum duplo superantibus lineari-oblongis; styli ramis truncatis; ovariis glabris; pappo albo.

Ligules twice as long, linear-oblong. *Style-branches* truncate. *Achenes* glabrous. *Pappus* white.

The described branch is 24 cm. high. Lower leaves somewhat crowded, about 25 mm. long, 12 mm. broad; the upper leaves gradually smaller. Heads 4 at apex of the branch, but in one strict lateral branch 3. Pedicels 4–8 cm. long. Involucre 1 cm. high and slightly narrower. Corollas of ray with a slender tube, 5 mm. long; ligules 12 mm. long, 3 mm. broad, tridentate, 4-lineate, closely resembling *S. otæguianus* Phil., but differing by its broader leaves, bracted pedicels and by having a calyculus.

W. Patagon., by Rio Aysen. Coll. Dusén, Jan. 8, 1897 (n. 472).

27. S. EIGHTSII Hook. & Arn.

Heads radiate. Close to *S. darwinii*, but with smaller, narrower, deeply trifid *leaves*, their segments varying in breadth, sometimes linear. *Heads* smaller.

Magellan; Fuegia; Staaten I.

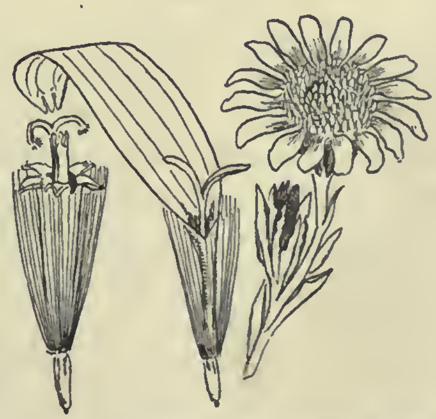
Var. with *procumbent* stem, lax, leafy, ascending branches, leaves 3–5-cleft, and heads shortly peduncled.

28. S. EXILIS Homb. and Jacq.

Stem prostrate, the branches ascending, cylindric, tomentose. *Leaves* oblong-linear, acute, sessile, entire, apically revolute-margined, both sides tomentose. *Involucral* scales 1-seriate, oblong, acute, sublacerous, with membranaceous margin, half as long as the flowers. *Achenes* glabrous.

Magellan; E. Fuegia, Dusén.

FIG. 100.



Senecio falklandicus.—Leafy branch and flower-head; also a disk-flower and a ray-flower. (From *Flora antarctica.*)

29. S. FALKLANDICUS Hook. f. (*S. littoralis lanatus* Gaud.)

Heads radiate, subsolitary. *Shrub*, with branches, peduncles and under surface of leaves densely woolly. *Leaves* linear-oblong to obovate-spatulate or lanceolate, entire or toothed, ending with an apical subacute callus, the margins revolute. *Heads* large, near 4 cm. across, most of them pedunculate, the peduncles bracted. *Involucre* broad, its scales about 3-seriate, linear, woolly at the base. (Fig. 100.)

"Allied to *S. patagonicus.*" (J. D. Hooker.) (See *S. littoralis.*)

Falklands, abundant; Magellan (Dusén).

30. SENECIO FALKLANDICUS PINNATIFIDUS O. Hoffm.

Leaves broad-lanceolate, the lower pinnatifid in the upper third part, the segments broad or narrow, obtuse or acute, entire or 1-toothed, different from the type.

Punta Arenas, Dusén.

31. S. FASCICULATUS Hook. & Arn.

Head solitary, terminal. Subdichotomously branching shrub, white tomentose. *Leaves* remote, linear, obtuse, fleshy, with revolute margins; their axils bearing leaf-fascicles or short, leafy branches. *Involucre* non-calyculate; its scales 18, subulate, their apex subsphacelate. *Achenes* long, glabrous, equalling the pappus.

(Chili); S. Patagon., Gregory Bay; by RR. Gallegos and Sta. Cruz.

32. S. FISTULOSUS Poepp.

Corymbose, radiate, glabrous perennial, 35 cm. high, with vertical, fistular rhizome. Two lower *leaves* petiolate, oblong, petiole and lamina each 10 cm. long, attenuate both ways, finely toothed. Upper leaves few, smaller, lanceolate, amplexicaul, slightly webby at base. *Pedicels* nearly naked. *Involucre* campanulate, its scales 20, shorter than the disk. Heads rather large, with 10 oblong ligules and 40 disk-flowers. *Achenes* glabrous.

S. Patagon., by Hatcher at head of Rio Chico de la Sta. Cruz, Feb. 9, "white."

33. S. FLACCIDUS Homb. & Jacq.

Heads rather large, 1 or few-corymbed. Many-stemmed undershrub, lax-woolly, erect, simple or nearly so. *Leaves* linear-oblong, obtuse. *Involucral* scales few at base, linear-oblong, acuminate, lacerate-fimbriate, shorter than the disk.

Magellan.

34. SENECIO GILLESIANUS Hieron. (*S. gilliesii* Phil. non H. & A.)

Patagon.; "differs from Phillipi's specimens by heads being slightly larger; *achenes* not densely hispid, but white-pubescent; *leaves* in some parts 72 mm. long, and lobules reaching 28 mm."

Var. *a*, *arachnoides* Hier. Leaves and branches webby. N. Patagon., by mouth of Rio Negro and the coast.

Var. *b*, *glaberrima* Hier. About Rio Negro.

35. S. GILLIESII Hook. & Arn.

Heads large. *Stem* few-leaved, scape-like, 1–2-headed. Hoary, with deciduous wool. Radical leaves oval-oblong, thick, fleshy, entire or toothed, attenuate to a long petiole. Cauline leaves sessile, the upper linear. *Involucre* broad-campanulate, calyculate, its scales about 30, linear-lanceolate, scarcely sphacelate. (See *S. sericeus* O. Ktze.)

(Argentina, Cordilleras); Patagon.

36. S. GLABER Less.

Corymbed, radiate. Herbaceous (?), glabrous. *Stem* terete, scarcely striate. *Leaves* sessile, pinnately parted; lobes 7–8 pairs, linear, acute, some lobulate. *Pedicels* generally shorter than the heads, minutely bracteolate above. Involucral scales 10–12, acuminate, not sphacelate. Ligules about 8, 3–4-nerved; disk-flowers 20–25. *Achenes* puberulous. *Heads* much more numerous and smaller than in *S. pinnatus.*

(S. Chili); Patagon., in high places by Rio Chubut; "herbaceo-fruticose fistulous; margins of leaves subrevolute, only thus in dry specimens (?)." (Speg.)

37. S. HATCHERIANUS O. Hoffm., n. s.[1] (Plate XXX, A.)

Undershrubs with *solitary*, *discoid heads* on strict branches which are densely leafy below and naked upwards. *Leaves* small, linear, sessile, obtuse, marginally revolute, entire or nearly so, covered on both surfaces with dense, sessile glands. *Heads* mediocre, with about 60 hermaphrodite flowers. *Involucre* sparsely calyculate, broad, the scales 15, glandular, linear, shortly acuminate, apically sphacelate. *Corollas* yellow, gradually enlarging, 5-toothed. *Style-branches* truncate; *ovary* glabrous; *pappus* whitish.

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[1] SENECIO HATCHERIANUS O. Hoffm., n. s.

Fruticulus ramosus, ramis glabris strictis in parte inferiore dense foliosis, superne pedunculoideis, squamis paucis bracteatis, monocephalis; foliis parvis linearibus sessilibus obtusis, margine revolutis, integerrimis vel rarius sub apice in utroque latere unidentatis, undique glandulis minutis sessilibus dense obsitis, capitulis mediocribus, homogamis, circiter 50-floris; receptaculo convexo, involucri parce calyculati late campanulati squamis 15, more foliorum glandulosis, linearibus, breviter acuminatis, tenuiter paucinervatis, summo apice minute velutinis et sphacelatis; floribus omnibus ☿ breviter exsertis; corollis luteis in limbum 5-dentatum sensim ampliatis; styli ramis truncatis; ovario glabro; pappo albido.

Cordilleras of Patagon., J. B. Hatcher, 1897.

Shrub of 25 cm., somewhat rough below, from the scars of the fallen leaves. Leaves ranging up to 2 cm. by 2 mm. Upper leafless part of the branches 4 cm. long, with a few narrow bracts of 3 mm. passing into the bracts of the calyculus. Involucre 8 mm. high, 12 mm. broad. Corolla 6 mm.

Similar to *S. gilvus* Phil. and *S. trifidus* H. A., but distinguished by the glandular pubescence and the form of the involucral bracts.

Type specimens, with Prof. O. Hoffmann, and no. 145 of *Plantæ Hatcherianæ* in Princeton University, U. S. A.

38. SENECIO HAUTHALII O. Ktze.

Heads discoid, 1–3, subsessile. Low shrub, with its lower branches covered by persisting petioles, otherwise glabrous. *Leaves* fleshy, pectinate, petiolate, the petiole-base amplexicaul, 3 cm. long, the basal lobes spinose. *Involucral* scales 1-seriate, subequal, 15–20, oblong, acuminate, fimbriate, with small, calyculate bracts, as long as the disk. *Achenes* short, pappillose. *Pappus* white.

Patagon.

39. S. HIRTHI Phil.

Heads few, on virgate branches, naked above. Glabrous undershrubs, with oblong-cuneate *leaves*, 3–5-toothed near top, crowded at base, shorter upwards. *Involucral* scales not apically sphacelate. *Achenes* glabrous.

At Rio Palena, west of the Cordilleras; S. Patagon., on the Cordilleras, Hatcher.

40. S. HUALTATA Bert.

Crowded *corymbs;* heads radiate. Herbaceous, glabrous; apically webby in parts when young. *Stem* terete, striatulous, leafy. Lower *leaves* petiolate, rhombo-hastate, acuminate both ways, unequally dentate, upper leaves semiamplexicaul, lanceolate, dentate. *Pedicels* mostly shorter than the heads, bracteolate. *Involucre* of about 20 scales, bracteolate, not ustulate, subcalyculate. Ligules 8–12, linear-oblong; disk-flowers 50–60. *Achenes* glabrous.

(Chili); Chubut, in præandine swamps.

41. SENECIO HYADESII Franchet.

Dense, terminal *corymbs* of yellow, discoid heads. *Plant* webby-tomentose, tall, with virgate, leafy branches. *Leaves* oblong, attenuate-petiolate, scarcely acute, margins revolute, the lower obscurely toothed. *Involucral* scales acute, woolly, except the apex. *Achenes* glabrous.

Magellan, Banner Bay.

42. S. HYPSOPHILUS Phil.

Heads radiate, solitary on the ends of the many branches, which are apically leafless, with long bracts. Glabrous undershrub; *leaves* long-petiolate, subspatulate, 5-cleft at top, rarely 3-cleft. *Involucre-scales* about 16, very acuminate; ligules as many, twice as long, scarlet. *Achenes* very striate, glabrous. Head about 25 mm. in diameter.

(Chili); Patagon. (?).

43. S. IBARI Phil.

Corymbed, 3–7 heads. Glabrous undershrub, branching at base, leafy throughout. *Leaves* crowded, linear, attenuate below, acute, entire, or with 1–2 teeth. *Pedicels* equalling the heads, with crowded, setaceous bracts. *Involucral* scales 15–20, glabrous, margin scarious, with gladular-ciliate apices. *Achenes* glabrous.

Magellan, Skyring Water, and Bahia de Gente.

44. S. INCISUS DC. (*S. neæi lobulatus* H. & A.). (See *S. neæi incisus* DC.)

Leaves subglabrescent, pinnately lobed, with 1–4 short teeth or segments, 5–10 mm. long.

(Argentina); Patagon.

45. S. KINGII Hook. f.

Scape 1-headed, *head* discoid. Glabrous herb, with simple, short, leafy, decumbent stem. *Leaves* petiolate, fascicled at the apex of stem, fleshy, linear-spatulate, coarsely toothed. *Scape* solitary, erect, with 2–3 subulate leaves, puberulous above. *Involucre* broad, its scales glabrous, linear-lanceolate, its tips sphacelate, shorter than the disk.

Patagon., valley of Rio Gallegos (Nordenskj.); Lagos; in Cordilleras of S. Patagon. (by Hatcher, Feb. 16, 1897); of the steppe-flora, growing in the driest places; Magellan; Fuegia.

46. SENECIO KURTZII Alboff. (non Phil.).

Heads solitary, large. Plant fleshy, glabrous, with creeping rhizome, sending up sterile shoots, and low, striate, leafless scapes, with setaceous bracts. *Leaves* spatulate, attenuate to long petioles, apically short-toothed. *Involucral* scales linear. *Flowers* dimorphous; of disk tubular, of ray fewer, female, filiform, obliquely truncate, with long style.

Fuegia, at Ushuaia; by Hatcher on Cordilleras of Patagon.

47. S. LÆVICAULIS DC.

Corymbose, discoid, glabrous. *Undershrub*, with terete, slender, flexuose, branching stem. Cauline *leaves* sessile, minutely auricled-cordate, elliptic-oblong, acute, with some teeth. Bractlets 3–5, ovate, ciliolate under the involucre; scales 10, equalling the disk, or longer, ciliolate-floccose at the apex. Disk-flowers 20, tubular.

(Chilian Andes.) Patagon., by Golfo de San Jorge.

48. S. LARICIFOLIUS H. B. & K.

Heads radiate, solitary, long-pedunculate. A small, branching *shrub*. *Leaves* dense, narrow-linear, subacerose, plane, entire, glabrous, spreading, 25 mm. long. *Involucre* campanulate, calyculate. *Achene* hispid. *Pappus* white, equalling the corolla.

(Peru); N. Patagon., plateaux.

49. S. LASEGUEI Homb. & Jacq.

Stems branching from the base, rooting, the branches ascending, glabrous, entire or remotely toothed at the apex. *Involucral* scales 1-seriate, oblong-linear, acute, sublacerous at the membranous margin, exceeding the flowers. *Achenes* glabrous.

Magellan, Port Peckett; Punta Anegada.

50. SENECIO LECHLERI Phil.

Heads discoid, 3–5 on the branches. Undershrubs, with erect, virgate, white-woolly branches. *Leaves* very green, rather glabrous on the upper surface, webby underneath, erect, *linear*, entire, acute, fleshy. Pedicels rather long, bracted, white-woolly. *Involucral* scales calyculate, apically very green and pencillate. All the flowers tubular, white, slightly longer than the involucres.

Magellan, near Punta Arenas.

51. S. LEUCOMALLUS A. Gray.

Heads 1–3, discoid, midsized, pediceled, on leafy branches. *Shrub* white, woolly, 30 cm. high. *Leaves* spatulate, entire, obtuse. *Involucre* woolly, with bracteoles equalling its scales. *Achenes* glabrous. (Leaves as of *Leontopodium.*)

Magellan; Fuegia, to Orange Harbor, near Cape Horn.

52. S. LEUCOSTACHYS Baker. (*S. albicaulis pinnatifidus* H. & A.)

Compound *corymbs*, heads twice as long as broad. *Shrub* hoary-tomentose, at length naked. Branches white, smooth. *Leaves* pinnatifid, their segments linear-elongate. *Involucre* oblong, its scales about 12, shorter than the corollas, 28 mm. long, acute, subsphacelate at apex.

Patagon., near Los Lamos.

53. S. LIMBARDIOIDES Hook. & Arn.

Many-headed *corymb.* Scabrous *shrub*, with strict, striate branches, subdensely leafy. *Leaves* broad-linear, subspatulate, acute, plane, entire, with a distinct rib underneath. *Pedicels* with subulate bracteoles and broad, calyculate *involucre*, its scales 16, linear-subulate, not sphacelate, shorter than the corollas.

Magellan, at Port Gregory.

S. LIMBARDIOIDES MAJOR.

Leaves and *heads* a little longer than the pedicels. *Involucral* scales numerous.

Magellan, Port Famine.

54. SENECIO LINARIÆFOLIUS Poepp.

Few-headed *corymb.* Glabrous, with terete branches. *Leaves* linear, basally attenuate; the apex with a callous point, entire, 25 by 3 mm. *Pedicels* of corymb long, bracteolate. *Involucre* 10–12-leaved, calyculate, its scales black-tipped and floccose. Ligules about 12, linear; disk-flowers 20. *Achenes* glabrous.

"Patagonian specimens have the involucral scales not black-tipped, but white-pencillate, leaves much shorter, and stems 1-headed and 3–5-headed." (Speg.)

(Mountains of S. Chili); Patagon., Chubut, swamp-meadows, by Lago Fontana.

55. S. LITTORALIS (Gaud.). (*S. vaginatus* H. & A.)

Large, radiate *heads*, solitary on leafy branches. Erect, terete, glabrous stem. *Leaves* sessile, linear to obovate-lanceolate, mostly acute, entire, coriaceous. *Involucre* calyculate, its scales about 20, linear-lanceolate, as long as the disk. Ligules 10–12. The leaves may be straight or falcate, acute or obtuse, 2–8 mm. broad; *heads* 35 mm. in diameter; 100 of the heads opening at once in a small plant render it handsome.

Falklands, abundant in marshy places. (Its var. *a* of DC. Prodr. is *S. falklandicus* Hook. f.)

56. S. LONGIPES Hook. f.

Corymbs with 3–7 broad, discoid *heads*, on very long pedicels, with subulate-filiform bracteoles. Glabrous or glandular, pubescent upwards, with simple, erect branches. *Leaves* fasciculate, narrow-linear or filiform, acute, basally attenuate, apically serrate, marginally revolute. Involucral scales 1-seriate, glandulous, shorter than the disk.

Fuegia, at Ushuaia; S. Patagon., by Hatcher. Magellan.

(*S. magellanicus* H. & A., sub *Culcitium.*)

57. S. MAGELLANENSIS (Phil.) Macl. (*S. magellanicus* Phil. (non H. & A.).

Heads solitary, discoid. Low perennial, with many *stems*, at length glabrous; stems simple, slender. *Leaves* linear, attenuate both ways, entire or toothed; when young snowy-tomentose; upper leaves few, setaceous. *Involucral* scales about 12, green, glabrous. *Achenes* glabrous.

E. Fuegia.

58. SENECIO MENDOCINUS Phil.

Heads radiate, 1–8 on branches naked above, on rather long peduncles. *Glabrous* shrub with fleshy, linear-filiform *leaves*, acute, crowded, and peduncles few-bracteate, *involucre* calyculate, with about 13 scales, marginally scarious, not apically sphacelate. Ligules 8–10. *Achenes* very shortly hispid.

N. Patagon., by Rio Negro.

59. S. MICROCEPHALUS DC. (*S. patagonicus* H. & A.)

Corymbose, 5–7-headed, heads discoid. Tomentose *shrub*. *Leaves* rigid, suberect, linear-oblong or oblong-lanceolate, subacute, entire, medially canaliculate above, margin revolute. *Pedicels* long. *Involucre* broad, calyculate, its scales linear-oblong, subacute to acuminate, shorter than the corollas.

(Chili); Magellan, at Port Famine; Fuegia, by Beagle Channel.

S. MICROCEPHALUS ACLONETUS (Ph.) O. Ktze.

A radiate form, its young not branched.

60. S. MICROCEPHALUS HOOKERI (Homb. & Jacq.) (sub *S. patagonicus*).

Stems low, 12–14 cm., much branching, densely leafy. Leaves fasciculate, lance-linear, basiattenuate, apically few-toothed, margin revolute. Peduncles thick, short. (Alboff.)

Fuegia.

61. S. MICROPIFOLIUS DC.

Heads 1–8, discoid, midsized, in terminal, bracteolate corymbs. Tomentose perennial, 30 cm. high, with erect, leafy branches; base of stem woody, leafless. Leaves sessile, oblong, with revolute margin, entire, ending in a dark point. Branches leafy to the top. Involucre "ovate," its scales about 15, woolly, but apically sphacelate, slightly shorter than the disk. Disk-flowers 30. Achenes glabrous.

(S. Amer.; Cordilleras of Chili); S. Patagon., by Hatcher at Cabo Negro and Coy Inlet, Dec. 20; Fuegia.

(The involucre is not ovate but campanulate and calyculate, with a few minute bracteoles. Leaves 2 cm. long. Otherwise it agrees with the description of DC. Prodr., vi, 413.)

62. SENECIO MISER Hook. f.

Heads 1–2, *discoid*, broad. Depressed, hairy-viscous *undershrubs*, with branching, scarred, ascending stem; branches short, leafy. *Leaves* many, small, coriaceous, rather crisp, narrowly linear-spatulate, irregularly sinuate-dentate or subpinnatifid; margins reflexed. *Pedicels* short. Involucral scales narrow-lanceolate, slightly shorter than the disk.

Magellan; Ushuaia, by Alboff (a larger form, 16–18 cm., stems naked below). From Rio Sta. Cruz, with the lobed leaves not viscous, and with larger, long-pediceled heads. (Speg.)

63. S. MISER TEHUELCHES Speg.

Branches 1-headed, with 3–6 linear, acute bractlets. Lowly cespitose, with narrow-linear *leaves*, glabrous below, having two lobes on each side; the upper leaves smaller. *Involucre* 1-seriate, of 13 scales, slightly adhering. *Flowers* in a head, 25–30, all tubular, slightly exceeding the involucre.

S. Patagon., by Rio Deseado.

64. S. MORENONIS O. Ktze.

Heads radiate, solitary, on nearly leafless peduncles. Low (15 cm.) silky-tomentose *undershrub*. *Leaves* crowded at the base of the branches, linear, acute, 4 cm. by 1 mm. *Involucral* scales about 20, linear acuminate. *Heads* turbinate or cylindrical. (Near *S argenteus* G. K.)

Patagon.

65. S. NEÆI DC. (See *S. sericeus* O. Ktze.)

Corymb simple, 7–8-headed, pedicels naked, as long as the discoid head. Shrub-like, branches terete, canescent. *Leaves* linear, entire, acutish, becoming glabrous. *Involucre* 12–13-leaved, shorter than the disk. Flowers about 20. *Achenes* terete, glabrous.

(Argentina; Chili); Patagon.

S. NEÆI INCISUS DC.

Leaves with 1–2 teeth on each side, or lobes, about midway.

S. Patagon., near Puerto Deseado, and Sacramento Colony.

66. S. NORDENSKJÖLDII O. Hoffmann.

Heads 1–few, terminal, small, *discoid*. Low, branching *shrub*, 20 cm. high, glabrous, but the young branches and leaves finely glandular-pubescent; leaf-scars on base of branches. *Leaves* sessile in outline, narrowly linear to oblanceolate, acute, entire, or mostly 3-(5-) pinnately parted next their apex. *Peduncles* with several short, acute bracts. *Involucre* campanulate, its scales 20, linear-oblong, acute, white margined, with an oily vitta. Flowers perfect, their tubular corollas yellow, enlarged upwards. *Style-branches* truncate. *Achenes* glabrous. *Pappus* white.

(S. Patagon., by O. Nordenskjöld in valley of Rio Gallegos); E. Fuegia (Dusén). "Yellow in bloom, all along the Andes, abundant" (Hatcher).

SENECIO NORDENSKJÖLDII SIMPLICIOR O. Hoffm.

Lower than the type, with some *leaves* 3-toothed, but most entire.

E. Fuegia, by the sea-coast (Dusén).

67. S. OTITES G. Kuntze.

Corymb large, compound. *Heads* nearly discoid. Glabrous herbs, with terete, striate, branching stem. *Leaves* with a broad, rounded, toothed auricle at base of the petiole, lamina broad-lanceolate, dentate, basally cordate or truncate. *Pedicels* sparsely bracteolate upwards. *Involucre* with 8–9 scales, not ustulate. Ligules 5, oval-oblong. Disk-flowers 15–20. *Achenes* glabrous.

(S. Chili); W. Patagon.

68. S. PACHYPHYLLUS Remy (non Cheesem.).

Heads 1–few on branches nearly naked above. Glabrous *shrubs*, with stem branching and rooting, branches leafy at the middle. *Leaves* sessile, oblong-linear, coarsely subcylindrical, entire, acute. *Peduncles* few-bracted. Involucre subcalyculate, ovoid-campanulate, its scales oblong-linear, scarious-margined, shorter than the disk. *Achenes* glabrous, costate.

(Talcaragua); S. Patagon., in Cordilleras, by Hatcher. A specimen in the Gray Herbarium, bears a note "Leaves slightly broader and heads larger"; the same is true of the Hatcher specimen. Professor O. Hoffmann confirms this identification, having compared Hatcher's plant with the description and with a specimen in the Berlin Museum, which was collected by Philippi.

69. S. PALENÆ Phil.

Corymb with about 5 heads. White, *silky* herb. *Leaves* narrow-linear, crowded at the base. Floriferous branches fastigiate. *Pedicels* naked, subequal. *Involucral* scales 12, immersed in wool. *Achenes* glabrous.

W. Patagon., valley of Rio Palena.

70. SENECIO PATAGONICUS Hook. & Arn. (= *S. microcephalus* DC.).

S. patagonicus Phil. = *S. sericeo-nitens.*

71. S. PINNATUS Poir.

Corymb few-headed. *Stem* terete, branching, the *leaves* crowded to the tops, sessile, pinnatipartite; their lobes linear-mucronate, some entire, others trifid. Pedicels bracteolate. *Involucral-scales* 10–12, nearly equalling the disk. *Ligules* 7–9; disk-flowers 20. *Achenes* glabrous.

(Brazil; Argentina); N. Patagon.; Tschalin.

S. PINNATUS GLANDULOSUS.

Dense *glandular-pubescence* upwards on the branches and leaves.

72. S. PŒPPIGII Hook. & Arn. (*S. micropifolius monocephalus* DC.)

Flower-heads solitary. Low, multiceps, all hoary-tomentose. *Stems* basally leafy; apically scapiform. *Leaves* oblong, subspatulate, obtuse, ending in a black point, laxly imbricate, entire, revolute-margined. *Peduncle* bracteate. Involucre campanulate, acute at base, calyculus with 16 leaflets, densely tomentose, subulate, with black sphacelate tops.

Patagon., by Moreno.

73. S. POLYPHYLLUS G. Kuntze.

Heads solitary on branches, leafless above. *Undershrub*, ascending, altogether puberulo-hirtellous. *Leaves* linear, entire, obtuse, margin subrevolute; the highest remote, few, bract-like. *Involucre* cylindraceous, as long as the disk, subnude at base, the scales about 15, subacute, sparingly ustulate at apex. Ligules 7–9, oblong; disk-flowers 15–20. *Achenes* glabrous.

(Chili, at elevations in Andes); S. Patagon., by Hatcher (as in the Gray Herbarium, but with thicker leaves. Near *S. sericeus neæi*).

74. S. PSAMMOPHILUS Griseb.

Corymb with 3–7 discoid heads. *Shrub* snowy-tomentose, with leafy branches 20 cm. long. *Leaves* linear, sessile, rounded-obtuse above, 1–2-crenate-pinnatifid or entire; lobes rounded. *Heads* 20-flowered.

Involucre broad, shorter than the disk, with 10–12 scales; the outer scales appressed, all sphacelate-obtuse at the apex. *Achenes* puberulous.

(Catamarca.)

SENECIO PSAMMOPHILUS DUSENII.

Branches more elongate than the type, virgate, flexuose. *Leaves* most entire, some pinnately 3-(or more) partite.

Patagon., at Puerto Madryn, by Dusén.

75. S. PULCHER Hook. & Arn.

Corymb of large heads, each 5 cm. broad. Handsome, simple or branching plant, sometimes a meter high, webby-tomentose, with deciduous wool. *Leaves* oblong-lanceolate, crenate-dentate, the radical as long as the petioles; cauline leaves remote, sessile, upwards semi-amplexicaul and subdecurrent. *Involucre* campanulate-hemispherical, calyculate, its scales not sphacelate, woolly, obtuse. Ligules 20, purple.

(S. Brazil); N. Patagon., by Rio Negro.

76. S. SERICEO-NITENS (Phil.) Speg. (*S. patagonicus* Phil. non H. & A.)

Radiate *heads* solitary, ending the branches. Silky-tomentose undershrubs, with long branches, naked upwards. *Leaves* narrow-linear, crowded, acute. *Involucre* without calyculus, its scales about 15, acute, tomentose, not sphacelate, scarcely shorter than the disk. Ligules to 12. *Achenes* glabrous.

Patagon.; by O. Nordenskjöld, in valley of Rio Gallegos.

77. S. SERICEUS (G. Ktze., 1831, sub *Cacalia*) O. Ktze.

This is made by O. Kuntze to include several species which have been separated chiefly by geographical marks; *low*, *shrubby*, with at least in youth a *silky-tomentose* indumentum; also as identical with *S. albicaulis*, *candolleanus*, *gilliesii* and *incisus*, H. & A. (1841); and *neæi* (with *leaves* entire, subglabrescent).

"Among these the size of the heads, the number of flowers in each, and the size of the leaves vary, the leaves being smaller in dry places. Entire and pinnatifid leaves may occur on the same shrub." (O. Ktze.)

78. S. SMITHII DC.

Terminal *corymb* of 6 or more broad, radiate heads. Erect, tall shrub, with hollow, simple *stem*, and leaves underneath or on both surfaces, lax-woolly, fragrant. Radical *leaves*, long-petioled, oblong, basi-cordate, subacute, dentate, with sheathing petioles. Cauline leaves cordate or lanceolate, sessile, acuminate, crenate-dentate. *Heads* with yellow disk, 3–5 cm. across, with 15–16 white ligules, long-acute or apically dilated. *Pappus* shorter than the achene.

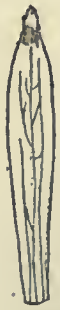
S. Patagon. and by Lago Argentino; not in steppe-region; W. Patagon., by Rio Aysen (Dusén); Magellan; Chiloe; S. Fuegia to Cape Horn. Handsome, nearly a meter high.

79. SENECIO STIPELLATUS O. Hoffmann.

Heads 2–4 at ends of the branches. *Undershrub*, 25 cm. high, branching at base and also above; leafy, striate, webby below. *Leaves* sessile, pectinately pinnatipartite, the segments and rachis equally linear; lower leaf-segments with *stipelliform lobules*. *Heads* midsized, peduncled, with a few acute bracts. *Involucre* broad-campanulate (8–10 mm.), its scales 20, apically sphacelate. Ligules yellow, twice as long as the involucre. *Achenes* puberulous. *Pappus* white. (Fig. 101.)

Patagon., at Rawson, near mouth of Rio Chubut (Dusén).

FIG. 101.



Senecio stipellatus. — Involucral scale. (After O. Hoffmann.)

80. S. SUBPANDURATUS O. Hoffmann.

Lax *corymb* of small, *discoid* heads. Glabrous *shrub*, 40 cm. high, with virgate, leafy branches. Lower *leaves* spatulate, upper oblong-panduriform, semiamplexicaul; all obtuse, repand-toothed or entire, graduating to subcordate bracts. *Involucre* broad, calyculate; its scales 20, narrow, acute, scarious-margined, as long as the disk, with an oleiferous vitta. *Flowers* perfect, yellow. *Achenes* puberulous. *Pappus* white, caducous.

E. Fuegia (Dusén).

81. S. SUBULATUS D. Don.

Subcorymbose. Branching, glabrous *shrub*. *Leaves* linear-subulate, mucronate-awned, entire or pinnatifid. *Involucre* broadly cylindrical; its scales acute, costate, scarcely sphacelate, with calyculus of short, subulate bracteoles. Ligules about 14, linear, scarcely exceeding the diameter of the many-flowered disk.

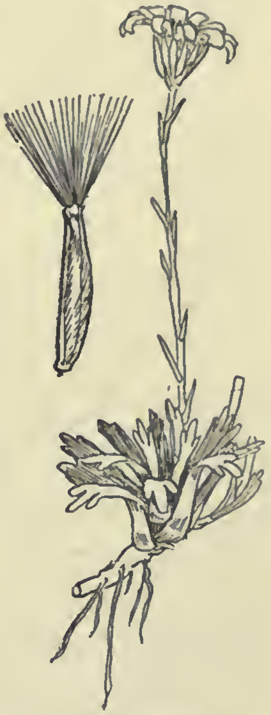
(Chili); Patagon.

82. SENECIO TRIFURCATUS Less.

Head solitary on simple, scape-like *stem*, bracted. Glabrous *shrub*. *Leaves* spatulate, trifurcate, the radical fasciculate. *Involucral* scales without sphacelate tips. Rays pale. ("White-flowered," R. O. Cunningham.) (Fig. 102.)

W. Magellan, at Puerto Angusto (Dusén). Fuegia, in marshy places to Cape Horn. "Avoids the steppes." Rio Gallegos (Barnum Brown).

FIG. 102.



Senecio trifurcatus. — Plant with 1-headed scape; also magnified fruit.

83. S. TUNICATUS O. Ktze. (non Klatt.).

Head broad, discoid, solitary on a simple, scape-like, nearly leafless stem. Low, cespitose, 10 cm. high. *Leaves* crowded at base, 5 cm. by 5 mm., linear, scariose, fuscous-red, rather smooth, appressed to stem, persistent, upwards linear-lanceolate, entire, herbaceous, tomentose. *Head* 2 cm. broad, rose to purple, with 40–50 flowers as long as the involucre and longer than the white pappus. Involucral scales 40, 1-seriate, subequal, calyculate. *Achenes* smooth.

Patagon. (Moreno).

84. S. VAGINÆFOLIUS Sch. Bip.

Head solitary, discoid. Hoary, tomentose *undershrub*. *Leaves* crowded below, spatulate, entire, arising from a long, scariose sheath. Upper leaves few, remote, small, lance-linear, passing into the involucral scales. Base of *stem* with old leaf-sheaths. *Achenes* glabrous, shorter than the snowy pappus.

Punta Arenas, on the sea-shore.

85. S. VERRUCULOSUS O. Ktze.

Heads discoid, solitary on branches, nearly naked above. Low *shrub*, scarcely 25 cm. high, the branches densely leafy at the base. *Leaves* warty, glabrous, sessile, falcate, linear to subulate, broader next their apex, 1–2 cm. long. *Flowers* of head 30–40, yellow, longer than the involucre, as long as the white *pappus*, 1 cm. long. *Involucral* scales 25, 1-seriate, canaliculate, apically black-punctate, pilose. Calyculus of few bracteoles. *Achenes* glabrous.

Varying: (1) *subulatus* O. Ktze. *Leaves* subulate, their margin inflexed, rarely 1–2-toothed. Patagon.

(2) *dentatus* O. Ktze. *Leaves* broader, the margin narrowly inflexed, mostly 2–4-toothed. Patagon.

86. SENECIO VULGARIS Linn. Groundsel.

Heads discoid, 4 mm. across, 6 mm. high, *corymbed.* Puberulent or glabrate annual, with hollow, branched *stem*, 30 cm. high, and pinnatifid *leaves* with oblong toothed segments. *Involucral* scales linear, usually with a few short, outer bracteoles. *Achenes* hoary. *Pappus* white.

(Europe, naturalized in N. Amer.); Magellan; Tyssen Is. (R. O. Cunningham); S. Fuegia, at Ushuaia; Falklands. (Doubtless introduced.)

87. S. WEBSTERI Hook. f.

Subsessile *panicle* of *radiate* heads. Suberect or prostrate woolly herb, with leafy stem. *Leaves* petiolate, fleshy, reniform-rounded, or deltoid, with obtuse angles, entire or sinuate-crenate, glabrate above, woolly underneath, the margins revolute. *Involucre* broad, its scales oblong-lanceolate, acute, glabrate at least midway. *Ligules* broad-ovate, 3-toothed. Odoriferous.

Magellan; Staaten I.

S. WEBSTERI SUBDISCOIDES A. Gray.

Ligules few, small. Branches ascending. *Leaves* fan-shaped, crenate-toothed.

Fuegia, at Orange Harbor.

88. S. XANTHOXYLON Phil.

Heads *discoid*, *subcorymbose.* Low *shrubs*, branching fastigiately from the base, silvery silky. *Leaves* sessile, fleshy, linear, obtuse, entire or apically tridentate, with short, acute lobes. *Branches* naked upwards, with few heads, and few woolly bracts. *Involucral* scales pencillate above, dorsally villous. Flowers in a head about 30.

Patagon., by Rio Sta. Cruz.

S. XANTHOXYLON ARANEOSULUS Speg.

Leaves apically trifid or 3-toothed, margins revolute. Plant at first webby, afterward glabrate. *Corollas* orange; pappus white.

Patagon., at Golfo de San Jorge, and by Rio Sta. Cruz.

56. ERIACHÆNIUM Sch. Bip.

Small, prostrate herb, with small, alternate, oblong or subspatulate, amplexicaul *leaves*, woolly underneath; and short-pediceled, axillary heads. *Involucral* scales 5–8, subequal, erect. *Flowers* all tubular, having corollas connate with the achene, woolly on outside; peripheral flowers 1–2 (or none), with short tube, fertile; central larger, sterile, their *anthers* acuminately tailed.

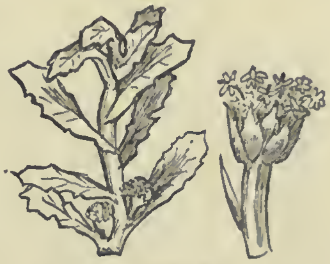
Species 1, viz.:

E. MAGELLANICUM Sch. Bip.

Closely allied to *Osteospermum* which has many species in S. Afr. and one in St. Helena. *Leaves* coarsely toothed. (Fig. 103.)

Fuegia, passim, loving salt-water shores.

FIG. 103.



Eriachænium magellanicum.—Branch, and magnified flower-head (after Dusén).

57. CARDUUS Linn. (1753). Thistle.

Common prickly herbs, with spiny often decurrent *leaves*. *Achenes* inserted by the base, not obliquely, glabrous. *Receptacle* densely bristly. *Corollas* slender, tubular, 5-cleft, purplish or greenish. *Anthers* basi-sagittate. *Style-branches* obtuse. *Pappus* of plumose bristles, united at base, falling away together.

Species 250, widely distributed in N. Hemisphere.

C. LANCEOLATUS Linn. (Scop. sub *Cirsium*, 1772; Willd. sub *Cnicus*, 1787.)

Stout biennial, partly tomentose, to more than a meter high, leafy throughout. *Leaves* lanceolate, acuminate, deeply pinnatifid, about 12 cm. long, decurrent, with triangular lobes, general outline lanceolate, bristly all over. *Heads* solitary on the branches, dark purple. *Involucral* scales prickly like the leaves.

(La Plata, introduced from Eur., "Cardo Negro"); spreading (Eng. & Prantl include the thistles with plumose pappus in the genus *Cirsium* Scop.).

58. SILYBUM Gaertn. Giant Thistle.

Heads large, solitary, homogamous, nutant. *Involucral* scales with leafy appendages, bearing terminal spines and shorter, lateral spines.

Flowers purplish, with filaments connate half way up or more. Fruit and pappus of *Carduus*, pappus-setæ not feathery.

Species 2; in warm parts of Old World.

SILYBUM MARIANUM Gaertn.

Leaves amplexicaul, sinuose-spinose, white-spotted (broader and thinner than of cardoon). (Fig. in Eng. & Prantl, iv, 5, p. 319, H.)

N. Patagon. by Rio Negro. (From S. Eur., W. Asia, etc.) In Argentina and Chili forms impenetrable groves. Its leaves are in quest for cattle and sheep. (In the dry season they are entirely gone.)

59. CYNARA Linn. Cardoon, Artichoke.

Biennial herbs resembling thistles, with ample, 1–3 times pinnatisect, spiny *leaves*, and large, solitary (?) *heads*, purplish to white. *Involucre* broad, of many-seriate, coriaceous scales, broad below, and imbricating, spiny-tipped (or under cultivation unarmed). *Receptacle* fleshy, plane, setose. *Corollas* slender-tubular. *Filaments* pilose, not connate. *Anthers* basisagittate, with connate tails. *Achenes* glabrous, thick, truncate. *Pappus* many-seriate, plumose, deciduous, with an annulus.

(Fig. in Eng. & Prantl, iv, 5, p. 323.)

Species 11, Mediterranean region; also cultivated and unarmed.

C. CARDUNCULUS Linn.

Head very large. *Leaf-segments* and involucral scales with only short spines. Fruit 4-angular.

(Europe, and naturalized in extra-trop. S. Amer.; also cult.); N. Patagon., near Rio Negro, not common there. (Heads 3 or 4, corymbed on the tall stem, in New York Botanical Garden.) Along with *Silybum marianum* forms impenetrable forests in Argentina.

60. CARTHAMUS Linn. Safflower.

Thistle-like herbs, with equal-flowered *heads*, solitary on the branches, or subcorymbose, yellow to purplish, not blue. *Involucre* ovoid or subglobose, its scales many-seriate, imbricate, the outer with leafy spinose tips. *Receptacle* chaffy-setose. *Anthers* with connate tails. *Achenes* glabrous, with oblique areoles. *Pappus* paleaceous or none.

(Fig. in Eng. & Prantl, iv, 5, p. 331.)

Species 20, Old World, from the Orient to the Mediterr. and Canary Is., and the following case of discontinuous distribution of the genus.

CARTHAMUS MAGELLANICUS Lam.

Unarmed. *Stem* herbaceous, simple, 16 cm. high, with 1 head. *Leaves* linear, entire, glabrous, diminishing upwards. *Head* small, naked, outer scales oval, glabrous, with short, lateral spines.

Magellan (by Commerson, 1767).

61. CHUQUIRAGA Juss. (*Dasyphyllum* H. B. & K., *Joannesia* Pers., *Chuquiragua* recentioribus.)

Shrubs, with paired, axillary spines or unarmed, and with homogamous or abortively diœcious *heads*. *Involucre* turbinate to ovoid, its scales many-seriate, imbricate, rigid, linear or lanceolate, the outer ones shorter. *Receptacle* mostly pilose. *Corollas* densely bearded inside. *Anthers* basally sagittate-tailed. *Style-branches* obtuse, not spreading. *Achenes* oblong or turbinate, silky. Pappus-setæ 1-seriate, plumose.

Species 33, Andine, and Brazil.

KEY TO THE SPECIES.

- *A*. Leaf-tips spinose. No axillary spines.
  - *b*. Pubescent. Heads 6-flowered. *erinacea.*
  - *b2*. Leaves glabrous, broader below, their apex becoming stout, sharp spines. Heads many-flowered. *hystrix.*
- *A2*. Branches and leaves subulate-spinescent, hirsute. Involucral scales villous. *acicularis.*
- *A3*. Spinescent leaf-tips and axillary spines.
  - *b*. Axillary spines in pairs.
    - *c*. Spines stout. Heads solitary, sessile in axils. Leaves broad-ovate. Achenes silky. *avellanidæ.*
    - *c2*. Spines short. Leaves lanceolate from a broad base, sessile. Achenes silky. *dusenii.*
    - *c3*. Leaves ovate-lanceolate, glabrous. Involucre villous, orange inward. *spinosa.*
    - *c4*. Spines axillary, very small. Involucral scales broad, muticous, yellow inwards. *kingii.*
  - *b2*. Axillary spines in 4's, short. Leaves long-linear, thick-margined. Involucre golden inwards. *patagonica.*

1. C. ACICULARIS Don.

Branches and *leaves* subulate-spinescent, hirsute. *Involucre* cylindraceous; its scales ciliate-villous; the outer reflexed-spinescent. These and the receptacle scarcely puberulous.

S. Patagon., by Rio Gallegos, and Rio Sta. Cruz.

2. CHUQUIRAGA AVELLANIDÆ Lor.

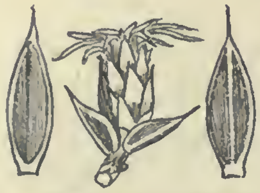
Woody; ramified from the base, with terete, sulcate *stem* and flexuose branches. *Leaves* sessile, broad-ovate, pungent-mucronate, generally concave, entire, mostly alternate, 17 by 9 mm.; spines paired in the axils, 3 mm. long, rather stout. *Heads* solitary, sessile in the axils, to 2 cm. long, cylindrical. Involucral scales many-seriate, the outer herbaceous, acuminate, the inner longer and narrower, the innermost long-linear, yellow above like an outer corolla, exceeding the flowers. Receptacle concave with white hairs. *Flowers* in the head not many. *Achenes* silky. *Pappus-setæ* 1-seriate, plumose, yellowish.

N. Patagon., by Rio Colorado, etc.; Chubut; S. Patagon., by Rio Chico. "Distinguished from *C. spinosa* by much larger leaves, broader and alternate; by much shorter, thick, brown spines; and involucral scales more numerous, with longer heads."

3. C. DUSENII O. Hoffmann.

Shrub, with erect branches, 16 cm., tomentose, with brown cortex when young. *Leaves* coriaceous, subconcave, lanceolate from a broad base, sessile, prolonged to a brown spine, entire, appressed-silky, at length glabrate, 3-nerved, the midnerve prominent; their margin thickened. Pairs of short axillary spines. *Heads* short, solitary on ends of branches, and sessile amid the shorter leaves. *Involucre* cylindrical; its scales many-seriate, imbricate, puberulous when young, the innermost exceeding the flowers, and with stellately recurved tips, the recurved part petaloid, linear, acute. *Achenes* silky. (Fig. 104.)

FIG. 104.



Chuquiraga dusenii. —Flower-head and involucral scales, natural size. (After O. Hoffmann.)

N. Patagon., by Puerto Madryn (Dusén). "Near *C. avellanidæ* but distinguished by having longer leaves with thickened margins."

4. C. ERINACEA D. Don.

Branches and leaves pubescent. *Leaves* subulate, concave above, spinescent tipped, without other spines. *Heads* 6-flowered.

(Fig. in Eng. & Prantl, iv, 5, p. 335, J.)

(Chili); N. Patagon.; widely spread there and northward. "Tschitri kekelu" and "Herba del Perdice" (Food of Rhea); S. Patagon., by the East Coast; by Hatcher on the Cordilleras, Feb. 1897.

5. CHUQUIRAGA HYSTRIX D. Don. (including *Flotovia hystrix*, Wedd. Chl. And. i, 6).

Larger and stronger than *C. erinacea*. *Leaves* glabrous, broader below, with sharp, brown point, pricking like needles, easily falling off the dry specimen. No other spines. *Heads* axillary, many-flowered. *Involucral* scales with somewhat webby margins.

Patagon., "its North limit is South of the Rio Negro. Very common thence to Rio Chubut." By Hatcher in Cordilleras of S. Patagon. Like the preceding it is called "Herba del Perdice."

6. C. KINGII Ball.

Axillary *spines* very small. Lateral nerves of *leaves* obsolete. *Involucral* scales rather broad, submuticous, with a cartilaginous apex; inner scales yellow. Otherwise as *C. spinosa.*

N. Patagon., to south of Rio Chubut. Indian name "Amtrac-tractschic."

7. C. PATAGONICA Phil.

Pubescent annual. *Leaves* alternate, linear, nervose, plane, mucronate, spinose; 28 by 2 mm., 3-nerved, the margin being thick like a nerve. *Spines* axillary, 4, short. *Involucral* scales, outer recurved, innermost long, acute, golden, ray-flowers female, sometimes 5-toothed.

Plain of N. Patagon., to Valdivian Andes.

8. C. SPINOSA Don.

Spines twin axillary. *Leaves* alternate, ovate-lanceolate, tips spinescent, glabrous, shining above, appressed-pubescent underneath. *Involucre* villous, its scales spinescent-tipped, the inner scales orange, thrice as long as the leaf. *Style* long-exsert.

(Peru and Cordilleras of Chili); N. Patagon.

62. DONIOPHYTON Weddel.

Like *Chuquiraga* but differing by having the *corollas* unbearded internally. Low, annual herbs, with small, linear *leaves* which often have minute, paired, axillary spines.

Species 4, in Chili and Argentina.

DONIOPHYTON ARGENTEUM Speg.

"Differs from *Chuquiraga anomala* Don. and *C. Patagonica* Phil. by its axillary *spines* being always in pairs, distinct enough."

S. Patagon., by Rio Sta. Cruz and Rio Gallegos.

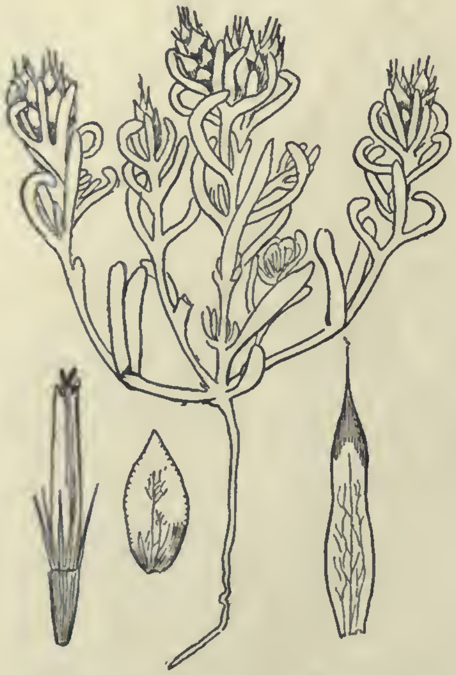
63. DUSENIA O. Hoffmann.

Low, annual herb, branching from the base, with linear-oblong, sessile *leaves*, the lower opposite, the upper alternate. *Heads* homogamous, of mid-size, *disciform*, solitary and sessile on the ends of the branches. Involucral scales many-seriate, imbricate, the outer mucronate, the inner long-acuminate. *Receptacle* slightly convex, naked. *Corollas* tubular, scarcely enlarged above, regular, 5-cleft. *Anthers* with connate tails. *Style-branches* short, not hairy. *Achenes* turbinate, silky. *Pappus* of 10 acuminate, 2-seriate pales.

(Near to *Gochnatia*, differing by the pappus.)

Species 1, viz:

FIG. 105.



Dusenia patagonica — Plant slightly reduced; also a single flower, with outer and inner involucral scales, enlarged. (After O. Hoffmann.)

D. PATAGONICA O. Hoff.

About 7 cm. high. *Leaves* obtuse, fleshy; the upper webby. *Flowers* shorter than the involucre, yellow. (Fig. 105.)

N. Patagon., at Rawson, near the mouth of the Rio Chubut (Dusén).

64. GOCHNATIA H. B. & K.

Tomentose or glabrous and glutinous shrubs, with alternate, coriaceous, entire *leaves*, mostly tomentose underneath and rather small; *heads* sessile crowded at the ends of the branches, or panicled, discoid, yellow. *Involucre* scales many-seriate, imbricate, ovate-lanceolate, or the inner ones long and dry. *Receptacle* naked or hairy. *Anthers* long-tailed. *Style* thickened upwards, subentire. *Achenes* 5-ridged, villous. *Pappus-setæ* copious, rigid, outer ones smaller.

Species 12, S. Amer., 1 in Bahama Is.

GOCHNATIA GLUTINOSA Don.

Viscous. *Leaves* linear-lanceolate, acuminate, veinless. *Heads* cylindrical, 5-flowered, fasciculate. *Involucral* scales lance-subulate.

N. Patagon., at Mendoza.

65. LAVIDIA Phil.

Heads discoid, medium-sized, terminal and sessile, many-flowered, all the flowers hermaphrodite. *Involucre* campanulate, its scales laxly imbricate, many-seriate, coriaceous, carinate, acuminate. *Receptacle* plane, glabrous. Outer *corollas* little cleft, bilabiate, their larger lip ovate, 3-toothed, the smaller bifid, apex revolute. *Inner flowers* tubular, sub-bilabiate, teeth cucullate. *Anthers* winged and long-tailed, tails plumose. *Styles* equal, thick, the branches short, obtuse, connivent. *Achenes* not truncate, papillose, at length ribbed. *Pappus-setæ* 1-seriate, rough.

Species 1, viz.:

L. CAESPITOSA PHIL.

Very low, cespitose shrub, with very short branches, 6 mm. thick. *Leaves* coriaceous, sessile, linear, entire, densely woolly at base.

Patagon., by Lago Pinto, and L. Argentino; Rio Sta. Cruz.

66. CYCLOLEPIS Gill. & Don.

Branching, hoary shrub, with rigid branches, sometimes spiny; and small, alternate, entire, coriaceous, silky *leaves*. *Heads* mid-sized, nearly sessile, ending the branches, discoid with a few flowers. *Involucral* scales many-seriate, broad-obtuse, dry scarious-margined; outer scales orbiculate. *Receptacle* naked. *Anthers* with long bearded tails. *Style-branches* obtuse. *Achenes* silky. *Pappus-setæ* rigid, barbellate.

(Differs from *Gochnatia* by involucre and style.)

Only one species, viz:

C. GENISTOIDES Gill. & Don.

Branches naked, terete, striate. *Leaves* sparse, linear-lanceolate.

(At Mendoza in Argentina. "Usillo"); N. Patagon., by Rio Negro; near Puerto Madryn. (Dusén.)

67. PLAZIA Ruiz &. Pav.

Shrubs of the habit of *Euphorbia*, with crowded, entire *leaves*. *Heads* mid-size, solitary (or corymbose), radiatiform, with hermaphrodite, or female, bilabiate ray; disk-flowers, having long, reflexed lobes. *Anthers* long-tailed. *Achenes* glabrous (or hairy), costate. *Pappus-setæ* several-seriate, unequal.

Species 8, Andes to Argentina.

P. ARGENTEA O. Ktze. (D. Don sub *Hyalis;* ita I. K. supp. 2).

Multicauline, silvery pubescent. *Stems* angled, simple. *Leaves* sessile, lance-linear, acuminate, entire. *Heads* paniculately corymbose. *Involucral* scales ovate-oblong, acutish, almost nerveless.

("Don's *Hyalis* has hairy or woolly fruit, wand-like branches, with few deciduous leaves." Eng. & Prantl.)

(Pampas of Cordova; characteristic of Bahia Blanca; "called 'Oliva,' also 'Maqui blanco'; its stem is used by the Indians as a masticatory." J. Ball.) N. Patagon.

68. PROUSTIA Lag.

Erect or climbing shrubs, sometimes hoary and sometimes spinose. *Leaves* alternate, coriaceous. *Heads* small, sessile on the branches, 3–5-flowered, all the flowers perfect and fertile. *Involucre* ovoid, its scales many-seriate, imbricate, ovate or the inner prolonged. *Receptacle* naked. *Corollas* bilabiate, or 1-lipped. *Anthers* long-tailed. *Style-branches* slightly flattened, rounded. *Achenes* 5-costate, villous or glandular. *Pappus-setæ* copious.

Species 10, Mexico, by the Andes to extratropical S. Amer.

1. P. BACCHAROIDES D. Don.

Shrub, with oblong, mucronate, dentate-spinulose *leaves*, snowy tomentose underneath. *Heads* 3-flowered, paniculate. *Involucral* scales obtuse. *Achenes* pilose. *Pappus* white, tufted above.

N. Patagon.

2. P. PUNGENS Poepp.

Erect, glabrous shrub, the uppermost branches apically spinescent. *Leaves* petiolate, lanceolate or cuneate, mucronulate, toothed, or entire, coriaceous. *Heads* laxly spicate, pink. *Achenes* cuneate-trigonal, villous. *Pappus* capillary, fuscous-purple.

PROUSTIA PUNGENS ILICIFOLIA (H. & A.) DC.

Leaves oblong, with a broad base, sinuate-dentate, petiolate.

(Chili; Argentina); N. Patagon.

69. MUTISIA Linn.

Erect or climbing shrubs, with alternate *leaves* (sometimes pinnate and with cirrhi), and large or long *radiate heads*, terminating the branches. *Involucral* scales many-seriate, imbricate, broad. *Corollas* of the ray 1–2-labiate, of the disk cleft towards the center. *Anthers* long-tailed. *Style* filiform, minutely 2-lobed. *Achenes* glabrous. *Pappus* 1-seriate, of rigid, plumose bristles.

(Fig. in Eng. & Prantl, iv, 5, p. 344.)

Species 60, in warm parts of S. Amer.

Species with pinnate leaves are in hot regions; others are extratropical, or in mountains.

KEY TO THE SPECIES.

A. Procumbent, with hoary, angular branches. Leaves lanceolate to ovate-oblong, subcordately amplexicaul. Involucral scales appendaged. *oligodon.*

A2. Erect.

  b. Leaves ovate, glaucous, amplexicaul, toothed-spinose. Heads coarse. *glauca.*

  b2. Leaves cordate-amplexicaul, toothed-spinose. Involucral scales long-appendaged. Ligules short. *brachyantha.*

  b3. Tall; peduncles long, 1-headed.

    c. Leaves ovate, truncate to retuse, glabrous. *moyanoi.*

    c2. Leaves ellipitical, subtruncate, glabrous above, tomentose underneath. *pulchella.*

A3. Climbing.

  b. Leaves semi-runcinate-pinnatifid, partly decurrent. Tendril trifid. Involucral scales appendaged. *retrorsa.*

  b2. Wingless. Leaves glabrous with a simple tendril.

    c. Involucral scales not appendaged. Leaves elliptical. Peduncle 1-headed. *chubutensis.*

    c2. Involucral scales appendaged. Leaves cordate, spinose-toothed. *ilicifolia.*

  b3. Subalate. Leaves lanceolate-linear, subdecurrent.

    c. Leaves spinose-toothed, with simple tendril. Heads large; involucral scales appendaged. *subspinosa.*

    c2. Leaves subentire, ending in a bifid tendril.

      d. Involucral scales appendaged. *decurrens.*

      d2. Involucral scales not appendaged. *patagonica.*

1. M. BRACHYANTHA Phil.

Very glabrous. *Stem* broadly winged, the wing coarsely toothed. *Leaves* cordate-amplexicaul, oblong, coarsely spinose-toothed, ending in a simple cirrhus. *Involucre* broad-cylindrical, the outer scales with a long, narrow-linear appendage. *Ligules* half as long as the involucre, scarcely exceeding the disk-flowers.

(Chili, Talca); Chubut, in hill-shrubberies.

2. MUTISIA CHUBUTENSIS Speg.

Stems tall, 50–300 cm., climbing, wingless, glabrous. *Leaves* subentire, elliptical, apex rounded, not or scarcely retuse, glabrous on both sides, with a simple *cirrhus*. *Peduncle* not long, 1-headed. *Involucral* scales, outer small, triangular-lanceolate, the others broadly ovate, not appendaged. *Ligules* twice as long as the involucre.

Chubut, in preandine shrubberies.

3. M. DECURRENS Cav.

Stem climbing, subangulate or subalate. *Leaves* sessile and decurrent by both margins, pinnately-veined, lance-linear, plane, entire, the lower few-toothed at base; mid-nerve produced to a bifid *cirrhus*. *Involucre* ovoid, its scales ovate, appressed, appendiculate, obtuse.

(S. Chili); Chubut, in preandine groves; a form with larger leaves marginally revolute and often obsoletely toothed midway on both sides. (Speg.)

4. M. GLAUCA Phil.

Glabrous. *Stem* terete; *leaves* ovate, amplexicaul, coriaceous, dentate-spinose, glaucous; *cirrhi* simple or trifid. *Heads* coarse. *Involucral* scales broad-triangular, ovate, mucronate, sparsely tomentose. *Ligules* about 20, broad, obscurely purplish.

(Chili); Chubut, upland shrubberies.

5. M. ILICIFOLIA Cav. (*M. truncata* D. Don.)

Stem climbing, terete, wingless. *Leaves* sessile, cordate, amplexicaul, reticulate, coriaceous, their margins coarsely spinose-toothed, glabrous both sides when adult, their midrib produced as a *cirrhus*. *Involucre* ovate-oblong, with the outer scales ovate and apically appendaged; inner scales obtuse.

(Chili); Patagon. (M. and T.).

MUTISIA ILICIFOLIA TRUNCATA (Don.) DC.

Delandotte regards this as a young condition of the species; having *leaves* cordate-oblong, spinose-toothed at base and apex, and involucre cylindrical.

(Chili); Patagon.

6. M. MOYANOI Speg.

Stems wingless, glabrous, 300–500 cm. tall, densely branching. *Leaves* alternate, glabrous on both surfaces, ovate, apically truncate to retuse or bilobed, margin entire or irregularly toothed; reticulately nerved with a long *cirrhus*. *Peduncles* long, 1-headed. *Involucral* scales, outer linear, reflexed; the others ovate; the outermost appendaged. *Ligules* twice as long as the involucre.

Chubut, in preandine shrubberies.

7. M. OLIGODON Poepp. & Endl.

Procumbent; branches angular, rather strict, hoary-tomentose. *Leaves* lanceolate or ovate-oblong, acutish, sessile, subcordately amplexicaul, apically sinuate on one or both sides, or 2-toothed; margin entire, plane; glabrous above, tomentose underneath. *Heads* terminal, peduncled. Lower *involucral* leaves with a lanceolate appendage, squarrose; upper ones obtuse, bearded at apex. *Corollas* of female ray elliptical, pink.

(S. Chili, in rocky alpine plains); Patagon. (M. and T.).

8. M. PATAGONICA Phil.

Stems climbing, subangulate or subalate. *Leaves* decurrent, lance-linear, 8 by 2 cm., ending in a bifid *cirrhus*, plane, entire, save 1–2 basal teeth, underneath wool-webby, a cottony bud in the axils. *Involucre* subcylindrical, its scales appressed, ovate, not appendaged. *Rays* in lower part densely woolly-webby.

(Chili); N. Patagon., by Lago Nahuel-huapi; Chubut, by Lago Fontana.

9. M. PULCHELLA Speg.

Stems 50–250 cm. tall, wingless. *Leaves* subentire, elliptical, apically truncate-bidentate or rounded, glabrous on upper surface, densely tomentose underneath, having a simple *cirrhus*. *Peduncles* long, 1-headed. *Involucral* scales external, few, linear, acute, reflexed; others broadly ovate, not appendaged, but the innermost marginally hairy-ciliate. *Ligules* twice as long as the involucre.

Chubut, in preandine shrubberies.

10. MUTISIA RETRORSA Cav.

Stem climbing, terete, winged by the decurrent leaf-traces. *Leaves* lance-linear, plane, entire ("semi-runcinate-pinnatifid," O. Ktze.), the lower few-toothed at their base, with their nerve ending in a bifid *cirrhus*. *Involucre* ovate; its scales appressed-ovate, appendiculate, obtuse.

(S. Chili, in mountain meadows); Patagon. ("Cirrhus simple," as in DC. Prodr. is erroneous. O. Ktze.)

M. RETRORSA LATIFOLIA O. Ktze.

Leaves broader, ovate (less one-third), pinnatifid.

Patagon.

11. M. SUBSPINOSA Cav.

Stem climbing, terete, subalate. *Leaves* sessile, basally decurrent, lanceolate-linear, spinose-toothed, glabrous; the midnerve produced to a simple *cirrhus*. *Involucre* cylindrical, its scales appendaged. *Heads* large, with golden ligules.

(Peru; Chili); Patagon. (Moreno and Tonini).

70. BRACHYCLADOS Don.

Rigid, branching *shrub*, with alternate, linear, entire *leaves*, their margins sometimes revolute; and rather large, peduncled, terminal, solitary heads on the branches. Ray- and disk-flowers fertile, mostly yellow. *Involucre* broad, its scales many-seriate, imbricate. *Anthers* long-tailed. *Styles* obtuse, slightly 2-lobed. *Achenes* 5-ribbed, glandular. *Pappus-setæ* several-seriate, copious.

Species 6, Patagon. and Argentina.

1. B. INVOLUTUS O. Ktze.

Tall, with glabrescent, striate branches. *Leaves* solitary, or in sets of 2–4, puberulent, subfalcate, ± 1 cm. by 2 mm.; sessile, acute both ways, one side more canaliculate. Peduncles 3 cm.; *heads* solitary, 2 cm. long and broad. Ray-flowers 12; disk-flowers 20. *Involucral* scales 3–4-seriate, externally tomentose, except the nerve; inner scales 15 by 3 mm., outer scales gradually shorter and revolute.

Patagon. (M. and T.).

2. BRACHYCLADOS LYCIOIDES Gill. and Don.

Differs from *B. involutus*, by having scarcely half as many involucral scales; which are not acuminate nor revolute; and by having smaller *heads*, and the *leaves* nearly twice as long.

(Andes of Mendoza); N. Patagon., by Rio Negro.

3. B. MACROCEPHALUS O. Ktze.

Low shrub, 50 cm. or more. Branches not striate, the young woolly. *Leaves* basally 5–8 times dilated; their dead bases persisting on the branches. *Heads* subsessile, 3 cm. broad, 2 cm. long; yellow. Ray-flowers 20; disk-flowers 40. *Involucral* scales as *B. involutus*, but very acute and rather rigid.

Patagon.; Lagos, about 50th parallel (Carl Burmeister).

4. B. OBTUSIFOLIUS O. Ktze.

Low, robust, 10 cm. high, densely pulvinate-branching. *Leaves* falcate, obtuse, epiphyl glabrous, hypophyl hoary and canaliculate; 6 by 1.3 mm.; basally somewhat dilated. *Heads* subsessile, 1 cm. broad and long; ray-flowers few; disk-flowers about 30. *Involucral* scales about 20, oblong, obtuse, apiculate.

Patagon. (M. and T.).

5. B. PYGMÆUS O. Ktze.

Very low, robust, prostrate, 15 cm. high; very pulverulent, with crowded branches. *Leaves* with widening base, woolly when young; the dead bases persisting on the branches. *Heads* subsessile, 15 mm. long and broad. Flowers smaller than in *B. macrocephalus*. *Involucral* bracts 15–20, acute.

Patagon. (M. and T.).

71. TRICHOCLINE Cass.

Perennial, herbs, with 1-headed, mostly leafless *scapes*. *Leaves* rosulate. *Heads* rather large, yellow, radiate. *Involucre* broad; its scales many-seriate, imbricate. *Receptacle* plane, nearly naked. *Ray-flowers* bilabiate, disk-flowers tubular, or all ligulate. *Anthers* long-tailed. *Style-branches* short, wide. *Achenes* 5-costate. *Pappus-setæ* many-seriate, copious.

Species 28, extratropical S. Amer., and Australia.

1. Trichocline heterophylla Less.

Leaves glabrous or laxly villous, long-petioled, oblong, entire or pinnatifid. *Involucral* inner scales obtuse or acute, their margins scarcely scarious, not undulate.

(Brazil; very common about Bahia Blanca, called "Chucho," but the true Chucho is solanaceous); probably in N. Patagon.

2. T. incana Cass.

Stem leafy; its base densely woolly; the *leaves* snowy-tomentose underneath, entire, or mostly pinnatifid, their segments subentire. *Involucral* scales lanceolate, white-woolly below, acuminate, subequal.

(Fig. in Eng. & Prantl, iv, 5, p. 341, G, H.)

(S. Brazil; Argent.); N. Patagon., near Rio Negro.

72. CHAPTALIA Vent.

Mostly stemless herbs from a perennial caudex. *Leaves* snowy underneath. *Scapes* 1-headed, leafless, but often with bracts under the radiatiform head. *Involucral* scales several-seriate, imbricate, narrow, acuminate, smaller outwards. Outer flowers ligulate, fertile; inner short-filiform; innermost bilabiate. *Anthers* tailed. *Style-branches* obtuse. *Achenes* narrowing upwards to a rostrum. *Pappus-setæ* copious, barbellate.

(Fig. in Eng. & Prantl, iv, 5, p. 341, J–N.)

Species 21, Mex. and W. Indies to Argentina.

C. integrifolia (Cass. sub *Leria.*)

Leaves elliptic-oblong or lanceolate, entire or with a few spinulose teeth, white-tomentose underneath. *Scape* 30–45 cm. high; head at length nodding. *Involucral* scales linear, apically subulate. *Achenes* angled, minute, puberulous, 4 times shorter than the rostrum.

(Brazil); N. Patagon.

73. MACRACHÆNIUM Hook. f.

More or less woolly herb, almost *stemless*, with tall, slender, 1-headed scape, and runcinate-pinnatifid *leaves.* *Heads* homogamous; corollas bilabiate. *Involucre* narrowly campanulate, its scales few-seriate, imbricate. *Receptacle* naked. *Anthers* long-tailed. *Style-branches* truncate. *Achenes* linear, striate. *Pappus* long-plumose.

Species 2. S. Patagon. and Fuegia.

1. MACRACHAENIUM FOLIOSUM Alboff.

Stem to 50 cm. tall, erect, weak, nodding under the head, sparsely woolly above; 3–7-foliate, rarely leafless. Radical *leaves* large, broad-oblong, deeply runcinate-pinnatifid; the lobes on each side 2–4, broad-oblong, few-lobulate, their lobules ending in a point; white-tomentose underneath. Petioles long, narrowly winged, floccose. *Cauline* leaves smaller, on shorter petioles. *Involucre* ovate-cylindric, woolly. *Pappus* white, yellowish at base.

Fuegia, by Beagle Channel; at Ushuaia, Valley of Rio Olivaia; Navarin I.

2. M. GRACILE Hook. f.

Scape 60 cm. high. Head 25 mm. long. *Flowers* white. A fine plant.

Magellan; by Hatcher, in Cordilleras of S. Patagon.

74. NASSAUVIA Juss.

Cespitose or diffuse undershrubs or herbs, glabrous or villous, with leafy, flowering branches. *Leaves* alternate, imbricate, often patent or recurved, rigid and ciliolate. *Heads* sessile, in glomerules, or few, or solitary; homogamous, few-flowered (3–5, or fewer), with oblong involucre, the few-seriate scales rigid, acute or subspinescent. *Receptacle* naked. *Anthers* long-tailed. *Style-branches* truncate. *Achenes* glabrous or villous. *Pappus* of pales or setæ, 1–2-seriate, often flat, rarely only 5–6.

(Fig. in Eng. & Prantl, iv, 5, p. 348, A, B.)

Species 25, extratropical. S. Amer and Andes. "The woody group of this genus is nearly peculiar to continental S. Amer., and to its drier parts; not crossing the Strait of Magellan on its western side; but on the east a few stretch down to Port Gregory, Staaten I., and the Falklands."

SECTIONS OF THE GENUS:

1. *Nassæa.* Heads in terminal, globular or ovoid glomerules. Pappus-scales 3–5, 1-seriate, not plumose, easily deciduous.
2. *Strongyloma.* Heads in axillary glomerules, and these in a long, leafy spike.

3. *Panargyrus.* Heads in terminal glomerules. Pappus-setæ numerous, 1–2-seriate, not easily deciduous, sometimes plumose.
4. *Mastigophorus.* Heads solitary. Pappus-scales numerous, 1–2-seriate, or few.

KEY TO THE SPECIES.

A. Heads in terminal glomerules.
  b. Nassæa. Pappus pales 3–5, deciduous. Shrubs with ovate leaves.
    c. Leaves dimorphous, spiniferous, entire on sterile shoots, pinnatifid on floral stems. *heterophylla.*
    c2. Leaves imbricate, spinose-toothed. Low, branching, glabrous. *nordenskjoldii.*
    c3. Leaves glabrous, rigid, imbricate, black-tipped. Dwarf cespitose. *pumila.*
    c4. Leaves revolute, with impressed parallel costæ.
      d. Glomerules subglobose.
        e. Leaves entire, hirsute on lower surface. *nivalis.*
        e2. Leaves spinulose-serrate, pubescent at first. *revoluta.*
      d2. Glomerules large, ovate. Leaves serrate, silky. *serpens.*
      d3. Glomerules in a short spike. Leaves gray-pubescent. *dusenii.*
    c5. Leaves imbricate, impressed-striate, recurved margin and apex, silvery underneath. Glomerules at length leafy. *argentea.*
  b2. Panargyrus. Pappus setæ 1–2-seriate, often plumose, not deciduous.
    c. Fruticose.
      d. Cespitose.
        e. Leaves linear, rigid, entire, glabrous. Pappus plumose. *abbreviata.*
        e2. Leaves obovate-cuneate, recurved, covering all the stem. *lagascæ* (of H. & A.).
      d2. Stem and leaves silky. Pappus plumose.
        e. Leaves linear-subulate, short. Heads in a terminal golden mass. *candollei.*
        e2. Leaves linear, subulate, pungent. Flowering branches scape-like. *darwinii.*
        e3. Leaves sparse, linear, entire, soft, obtuse. Heads crowded apically on the branches. *laxa.*
      d3. Hoary velvety. Ascending. Leaves crowded at base, pinnatifid, spinose. Terminal racemes on branches. *spinosa.*
    c2. Herbs, with spinose leaves.
      d. Erect, simple stem. Leaves villous, cuneate, ovate, incised. *suaveolens.*
      d2. Subcespitose. Leaves glabrous to webby, linear-lanceolate. Pappus not plumose. *subspinosa.*
A2. Strongyloma. Heads in axillary glomerules, forming a leafy spike.
  b. Leaves oval, toothed-ciliate at base, apically recurved. Cespitose shrub. Pappus pales 3–4. *pygmæa.*
  b2. Primary leaves subtending secondary fascicles.
    c. Primaries subulate, sheathing.
      d. Secondaries linear-mucronate, recurved. Heads subternate. *axillaris.*
      d2. Secondaries complicate-incurved. Heads solitary. *glomerulosa.*

*c*2. Primaries spinescent. Secondaries rosulate.

d. Primaries linear-subulate. Secondaries minute, ovate. Heads in 2's or 3's, 1–2-flowered. *patagonica.*

*d*2. Primaries broad-subulate; secondaries short, obtuse. Heads subglomerate. *rosulata.*

*b*3. Leaves cuneate-oblong, serrate, imbricate. *magellanica.*

*b*4. Leaves ovate, spinose, serrate. Glomerules in a leafy raceme. *pyramidalis.*

*A*3. *Mastigophorus.* Heads solitary. Pappus pales 1–2-seriate.

b. Low, branching shrubs, with short, broad, thick, sessile leaves, imbricate and amplexicaul.

c. Heads sessile.

d. Leaves recurved, silky; 5 white flowers in the head. *ameghinoi.*

*d*2. Leaves orbicular, emarginate; 5 yellow flowers. *bryoides.*

*d*3. Leaves deltoid, pilose-glabrescent, entire or two-toothed. *morenonis.*

*c*2. Heads small, solitary on short branches. Leaves suborbicular-deltoid, silky. Achenes villous. *modesta.*

*b*2. Low, branching, with leaves longer than wide.

c. Heads terminal, solitary.

d. Leaves linear-subulate, spinulose-toothed. Petioles dilated at insertion. *remeyana.*

*d*2. Leaves lanceolate, spinulose-serrate. *gaudichaudii.*

*c*2. Leaves narrow, pungent. Achenes villous.

d. Heads on short axillary branches. Leaves linear. *scleranthoides.*

*d*2. Heads solitary, ending the branches. Leaves subulate. *ulicina.*

*b*3. Cespitose. Leaves spiniferous.

c. Leaves ovate, glabrous; branches cottony below. Achenes glabrous. Heads small, solitary in the axils. *chubutensis.*

*c*2. Leaves ovate-triangular, recurved; those on sterile branches basally cucullate, ending in a long spine. Heads terminal, solitary. *struthionum.*

1. NASSAUVIA ABBREVIATA (Hook. & Arn. sub *Panargyrus*).

Cespitose, glabrous, branching at the base, substoloniferous. *Leaves* rigid, spreading, recurved, linear, acuminate, mucronate, entire, sheathing at the base, with silky axils. *Heads* in terminal hemispherical glomerules. *Pappus* plumose.

Magellan; N. Fuegia (Dusén).

N. ABBREVIATA SUBSPINOSA Phil.

Chubut, in dry rocks; Fuegia.

2. N. AMEGHINOI Speg.

(*Mastigophorus.*) Shrubby, branching, cespitose. *Leaves* remotely imbricate, recurved, minute, thick, entire, their venter convex, glabrous, 2-sulcate, dorsally appressed, silky-villous, sessile, 1-toothed on each side of sheath, subscarious, amplexicaul. *Heads* apical, solitary, sessile; with 5 white *flowers.*

Patagon., by Golfo de San Jorge.

3. NASSAUVIA ARGENTEA Phil.

Stems ascending, branching. *Leaves* imbricate all over the stem, semi-amplexicaul, ovate-oblong, acute, with recurved margin and apex, their upper surface parallel-impressed-striate and pubescent; the under surface with dense silvery silk. *Heads* crowded in a glomerule, at length leafy.

(Chili, Valdivian Andes, in snow); Chubut Mts. ("Var. of *N. navalis.*" Speg.).

4. N. AXILLARIS Don.

Primary *leaves* subulate-trigonous, cucullate-sheathing at base. *Secondaries* fasciculate, linear-mucronate, recurved. *Heads* subternate.

(Argentina); Patagon. M. & T.

5. N. BRYOIDES O. Hoffmann. (Plate XXVIII, A.)

Dwarf shrub, branching, forming a cushion; the branches short and densely leafy. *Leaves* close, imbricate, sessile, orbiculate, entire, pale at base, green at apex, emarginate, slightly complicate. *Heads* sessile, solitary at ends of some branches, radiant. *Involucre* cylindrical, of 8–10 scales, the outer ovate, the inner elliptic, all sparsely villous and mucronate. *Flowers* 5, yellow. *Achenes* silky. *Pappus-pales* linear, silky.

"Assumes many forms," "habit of *Androsace.*"

S. Patagon., in Upper Valley of the Rio Gallegos (Nordenskjöld); by Rio Chico de la Sta. Cruz (Hatcher).

6. N. CANDOLLEI Macl. (*Panargyrus lagascæ* DC. 1838 non *Caloptilium lag* H. & A. 1835).

Stem and leaves silky; the *leaves* linear-subulate, short, revolute, supporting the *heads* which are conglomerate in a terminal, hemispherical, golden mass. *Pappus* plumose.

S. Patagon. (by Hatcher in the Cordilleras. Feb. 11, 1897. One specimen has two heads close together on a forking branch).

7. N. CHUBUTENSIS Speg.

Undershrub, laxly pulvinate-cespitose, branchlets long, erect, cottony below, glabrate towards the apex, laxly leafy. *Leaves* glabrous, ovate, with 2 spreading spines on the margins, and a larger trifid apical spine. *Heads* small, solitary at the axils of the upper leaves, involucral scales 8. *Flowers* 5, white. *Achenes* obovate, glabrous.

Chubut, in dry, gravelly valleys.

8. NASSAUVIA DARWINII (Hook. & Arn. sub *Panargyrus*).

Cespitose and woody, branching at base and appressed-silky. *Flowering-branches* long, sparsely leafy, scape-like above. *Leaves* linear-subulate, pungent, entire, their margins obscurely revolute. *Heads* crowded in larger heads at ends of branches, with subulate bracts. *Pappus* 1-seriate, plumose.

Magellan; Puerto Deseado; E. Fuegia (Dusén). ("Chiefly in the Eastern parts; a steppe plant.") Killik-Aike (Barnum Brown).

9. N. DUSENII O. Hoffm., n. sp.[1] (Plate XXX, C, D.)

Low undershrub, branching from the base, the branches ascending, and covered from base to apex by closely imbricate leaves; leaves grey-pubescent on both surfaces, ovate or ovate-lanceolate, acuminate, briefly spinose-mucronate, sessile with a broad base, the upper surface with many parallel striæ, the margin with short spinose teeth from the excurrent nerves. Upper leaves erect, plane; the lowest reflexed from their base. Heads crowded in a short, cylindraceous, terminal spike. Bracts leafy, slightly shorter than the subtended head.

Branches, as well as the whole plant examined, 10 cm. long. Leaves 12 mm. long by 5 mm. broad. Spike about 3 cm. long, 2 cm. broad.

W. Patagon., by Rio Aysen. Coll. Dusén, Feb. 13, 1897 (n. 584).

10. N. GAUDICHAUDII Cass. (DC. sub *Mastigophorus*.)

Stem shrubby, branching, cespitose. *Leaves* lanceolate, carinate, nervose, acute, with recurved margin, spinulose-serrate. *Heads* solitary, terminal. *Pappus* of broad pales

(*N. pygmæa* H. f.? Approaches *N. glomerata* Gill.)

Magellan; Falklands; S. Patagon. (Hatcher).

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[1] NASSAUVIA DUSENII O. Hoffm., n. sp.

Suffruticosa humilis, a basi ramosa, ramis adscendentibus foliosis, foliis a basi usque ad apicem arcte imbricatis utrinque griseo-pubescentibus ovatis vel ovato-lanceolatis acuminatis breviter spinoso-mucronatis, basi lata sessilibus, supra parallele multistriatis, margine nervis excurrentibus breviter spinoso-dentatis, superioribus erectis planis, inferioribus a basi reflexis; capitulis in spicam terminalem breviter cylindraceam congestis, bracteis foliaceis capitulo suffulto paulo brevioribus.

11. NASSAUVIA GLOMERULOSA Don. (DC. sub *Strongyloma.*)

Primary *leaves* subulate, dilated at base; *secondaries* complicate incurved, muticous. *Heads* solitary. (Near *N. axillaris.*)

(Chili, in high Andes); Patagon.

12. N. HETEROPHYLLA Alboff.

Long, creeping *rhizome*, sending up floriferous, villous stems and sterile, glabrous shoots. *Leaves* dissimilar; on the shoots ovate-lanceolate to ovate, entire, ending in long spines; on the flowering *stems* broader, pinnatifid, with linear, spinescent segments, rarely apically toothed. *Heads* in an ovoid, terminal raceme. *Involucral* scales leaf-like but broader, villous. Beautiful, with white, aromatic flowers.

Fuegia, mountains near Ushuaia.

13. N. LAGASCÆ (H. & A. sub *Caloptilium*, 1835).

Cespitose. Leaves imbricated, oboval-cuneate, crenulate, nervose-striate, recurved, covering all the stem. *Heads* glomerate at the apex of the stem, with sessile glomerules.

S. Patagon., by Lago Argentino, Chubut in mountain rocks.

14. N. LAXA (Phil. sub *Panargyrus*).

Silvery-silky. Stem laxly branching, procumbent, the flowering branches ascending. *Leaves* sparse, linear, entire, obtuse, herbaceous, soft, 13 by 2 mm. *Heads* crowded at the tops of the branches. *Floral-leaves* lance-linear. *Pappus* plumose. *Branches* 12 cm. long.

S. Patagon., by Rio Gallegos.

15. N. MAGELLANICA Gmel.

Stem ascending, closed with alternate, imbricate *leaves*, which are cuneate-oblong, pointed, deeply serrate. *Spike* simple, dense, terminal, invested with ovate, acute bracteoles. Exquisitely scented.

Magellan.

16. N. MODESTA O. Hoffmann.

(*Mastigophorus.*) *Low*, branching shrub, 10 cm., rooting at base. *Leaves* imbricate, suborbicular, amplexicaul, the limb deltoid, mucronate, entire, minutely silky-puberulous. *Heads* small, solitary, ending the short, few-leaved branches, sessile. *Involucral* scales 5, broad-elliptical, mucronate, 3-nerved. *Flowers* 5, outer lip radiant. *Achenes* silky-villous. *Pappus-pales* 5, white-silky.

S. Patagon., by Rio Guillermo (Nordenskjöld).

17. NASSAUVIA MORENONIS O. Ktze.

(*Mastigophorus.*) Densely *cespitose* herb, with thick, short, rooting branches, 2–3 cm. high. *Leaves* imbricate, amplexicaul, pilose-glabrescent, deltoid, 2–3 mm. long, and basally as broad, apex obtuse, recurved, thick, entire or 2-toothed. *Head* solitary, sessile, terminal. Involucral scales 4, scarious, ovate, 2 mm. long, spinose-acuminate, with a reflexed point, denticulate, pilose; with 2 linear, shorter bracteoles. *Flowers* 4–5, bilabiate. *Pappus-setæ* 4, pilose, sublanceolate. Achene glabrous.

Patagon. (M. & T.).

18. N. NIVALIS Poepp.

Stem suffruticose, creeping, ascending, sparsely branching. *Leaves* imbricate its entire length, amplexicaul, broad-ovate, recurved at apex, rough below, smooth above, with parallel, impressed striæ, entire. *Heads* in a subglobose glomerule, slightly exceeding the bracts. *Achenes* oblong, turbinate, glabrous. *Pappus* of 1-seriate, linear pales. (Near *N. serpens.*)

(S. Chili, at 2,500 m. elevation); S. Patagon., in Cordilleras, by Hatcher.

19. N. NORDENSKJOLDII O. Hoffmann. (Plate XXVIII, B.)

Low, branching, glabrous shrub. *Leaves* closely imbricate, ovate, with a broad base, semiamplexicaul and soft-toothed, and spinose-toothed above. *Heads* glomerate at the end of the branches, each with a leafy bract. *Involucral* scales 2–3-seriate, 6–10 sublanceolate, entire. *Achenes* glabrous. *Pappus-pales* 3–5, white, caducous.

S. Fuegia, by Beagle Channel; S. Patagon., in Valley of Rio Gallegos (Nordenskj.); and on volcanic rocks at high altitudes near head of Rio Chico de la Sta. Cruz (Hatcher).

20. N. PATAGONICA Speg.

(*Strongyloma.*) Primary *leaves* linear-subulate, rigid, spinescent, at first erect-pubescent, afterwards spreading, glabrous. Secondary leaves minute, ovate, obtuse, sessile, sheathing, fascicled, and rosulate in the axils of the primaries. *Heads* in 2's or 3's, sessile on the apex of the peduncles, from axils of the primary leaves, 1–2-flowered, the outer bracts spinescent; the inner appressed, unarmed.

Patagon., by Golfo de San Jorge; Killik-Aike (Barnum Brown).

21. NASSAUVIA PUMILA Endl. & Poepp.

Glabrous dwarf, cespitose, branching. *Leaves* rigid, apically recurved, imbricate, sessile, ovate, acute, ciliolate at the base, apically blackish and 3-toothed, the teeth denticulated. *Heads* sessile, terminal, crowded amid the leaves, 5-flowered. *Involucral* scales scarious, apically black, the outer shorter and narrower. *Achenes* obovate. *Pappus-pales* 3–5, caducous, longer than the achenes.

Patagon., Chubut, in mountains; Fuegia, alpine above Ushuaia.

22. N. PYGMÆA Hook. f. (DC. sub *Strongyloma;* H. & A. sub *Acanthophyllum.*)

Shrubby, cespitose, glabrous. *Leaves* oval, acute, dentate-ciliate at their base, apically recurved. *Heads* crowded at the apex, intermixed with floral leaves. *Pappus-pales* 3–4.

Magellan; Fuegia, by Orange Harbor and Blossom Bay. (As *Triachne*, save that its pappus is as *Nassauvia pumila*, DC. Prodr., vii, 50. "Like a starved specimen of *N. gaudichaudii.*" J. D. H.)

23. N. PYRAMIDALIS Meyen.

Glabrous, suffruticulose, branches strict. *Leaves* ovate, rigid at base, spinose-serrate, ending in a spinose point. *Heads* crowded in the uppermost axils, making an ovoid raceme; lower bracts exceeding the heads. *Receptacle* naked.

Near *N. macrantha* DC., but differing by having the *leaves* ovate, not lanceolate, stem strict, *heads* glomerate.

Patagon.; Chili, by Rio Maipu (33° 5).

N. PYRAMIDALIS ARACHNOIDEA O. Ktze.

Leaves and shoots webby, but the sterile stems glabrous.

Patagon., Lagos.

24. N. REMEYANA Wedd.

Leaves crowded, linear-subulate, gradually attenuate from a dilated base, laxly spinulose-dentate, pubescent or glabrate. *Heads* solitary, terminal, 4 cm. long. *Pappus-setæ* linear, rather persisting. *Leaf-borders* armed with the sharp spines.

S. Patagon., by Hatcher in Cordilleras. (Also a specimen in Gray Herb.)

"Food of Rhea."

(*N. repens* d'Urv. = *N. serpens* d'Urv.)

25. NASSAUVIA REVOLUTA Gill.

(*Nassæa.*) Pubescent. *Leaves* ovate, revolute, spinulose-serrate, at length glabrate above; costæ numerous, impressed-parallel, round, contiguous. *Heads* in a roundish spike. *Pappus* 1-seriate, of linear pales.

(Fig. in Eng. & Prantl, iv, 5, p. 348, B.)

(Argentina); S. Patagon., at Cerro Toro (Nordenskj.).

26. N. ROSULATA Ball. (H. & A. sub *Acanthophyllum.*)

(*Strongyloma.*) Dwarf, cespitose, branching from the base. *Leaves* woolly; primary leaves broad-subulate, amplexicaul, spinescent; secondary very short and obtuse, concave, rosulate, densely covering the lower part of the stem. *Heads* subglomerate, the lateral shortly peduncled.

Beautiful plants, the secondary leaves forming *rosules* in the axils of the primaries, which they soon obliterate, so as entirely to clothe the old parts of the stem. "A stunted shrub." "It is used to make combs for the Indian women."

Patagon., by Puerto Deseado, and northward; Chubut.

27. N. SCLERANTHOIDES O. Hoffmann.

Low, branching shrub, the branches prostrate. *Leaves* imbricate, appressed-silky, from a short, broad, amplexicaul sheath, suddenly attenuate to a spreading, linear, entire limb, with thick edge and pungent tip. *Heads* solitary on ends of short axillary branches. *Involucral* scales, outer 3–4, short, ovate; inner longer and narrower; all appressed-silky, hyaline-edged and mucronate. *Flowers* 4–6. *Achenes* villous. *Pappus-pales* 3, white, caducous. (*Mastigophorus*, with habit of the section *Strongyloma.*)

Patagon., at Puerto Madryn (Dusén).

28. NASSAUVIA SERPENS d'Urv.

Stem suffruticose, 30–60 cm. high, creeping, sparingly branching. *Leaves* along its whole length imbricate, amplexicaul, broad-ovate, serrate, acute, suberect or recurved, coriaceous, parallel-striate, more or less silky. *Heads* 4–5-flowered, sessile at the leaf-like bracts, in a large, dense, ovate glomerule. *Achenes* glabrous. *Pappus-setæ* 4–5.

Falklands; "abundant in the streams of stones; sending its brittle stems, several fathoms long, down through the rocks to the underlying soil." S. and W. Patagon., in upper valley of Rio Aysen (Dusén).

29. N. SPINOSA Don.

(*Panargyrus.*) *Stem* fruticulose, ascending. *Branches* velvety. *Leaves* crowded at the base, distant upwards, oblong-lanceolate, pinnatifid, dentate, spinose, hoary-villous, becoming smooth. *Heads* racemed at the end of the branches, the lower a little distant and axillary, above crowded and shortly pedicelled. *Pappus* 1-seriate.

(Chili); Patagon., common by Rio Gallegos and Rio Sta. Cruz.

30. N. STRUTHIONUM (Phil. sub *Strongyloma*).

Low, cespitose shrub. *Leaves* of fertile branches sessile, imbricate, ovate-triangular, acute, coriaceous, apically recurved; those of the sterile branches form a cucullate base ending in a long spine. *Heads* terminal, solitary. *Pales* linear.

S. Patagon., by Lago Pinto; Fuegia, Punta Anegada. Favorite food of rhea.

31. N. SUAVEOLENS Willd.

Stem herbaceous, erect, simple. *Leaves* cuneate, ovate, coarsely and acutely incised, subspinescent at the apex, villous beneath. *Heads* in a terminal, ovate glomerulus; *bracts* villous, exceeding the heads.

S. Patagon.; Magellan; S. Fuegia to near Cape Horn.

32. N. SUBSPINOSA (Phil. sub *Panargyrus*).

Low, subcespitose herb, glabrous or arachnoid-silky. *Leaves* sessile, linear-lanceolate, pungent, armed at both margins with a spiny tooth. Floral leaves similar, but often entire. *Heads* crowned at tops of the branches. *Pappus* not plumose.

(Chili); Fuegia; S. Patagon., by Hatcher at head of Rio Chico.

33. NASSAUVIA ULICINA (Hook. f. sub *Trianthus*).

Woody, depressed, glabrous. *Leaves* subulate, pungent, spreading-recurved, imbricating and sheathing at the base. *Heads* solitary at the ends of the branches, about 3-flowered. *Involucral* scales few. *Achenes* villous. *Pappus* of 3–5 pales.

Patagon.

75. TRIPTILION Ruiz & Pav.

Annual or perennial, erect herbs, with rather small, 3–5 flowered heads in terminal corymbs, or occasionally solitary; flowers all hermaphrodite. *Involucre* ovoid or oblong, its scales few, acute, the inner 5 subequal and erect. *Receptacle* small, nearly naked. *Corollas* bilabiate. *Anthers* connate-tailed. *Achenes* obovoid, papillose. *Pappus* of 4–5 caducous pales. *Leaves* scattered, often spinose-toothed or pinnatifid. *Flowers* blue or white.

Species 7, Chili to Patagon. Differs from *Nassauvia* chiefly in habit.

TRIPTILION DUSENII O. Hoffm., n. sp. (Plate XXX, E.)[1]

Low, erect, slender, annual, branching from the base or upwards, hispid, with short hairs. *Leaves* small, appressed strigulose, sessile, with a broad base; oblong in outline, pinnately 5-cleft, with linear rachis, and short, subacute segments. Floral leaves lanceolate, entire. *Heads* crowded at ends of stem and branches, or solitary on the lower branches, pediceled, the upper sessile. *Involucral* scales oblong, acute, green, with white, hyaline margin, apically pubescent, about 5-nerved, subcarinate. *Flowers* slightly exsert. *Corolla* (dry) white; *pappus* snowy.

Plant, including the root, 6–7 cm. high. Largest leaves, 9 mm. long, inclusive of their dentiform segments, 2½ mm. broad, rachis 1½ mm. broad. *Heads* 6 mm., *involucre* 4 mm. high.

S. Chili; Los Angeles. Coll. Dusén, Jan. 29, 1896 (n. 214).

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[1] TRIPTILION DUSENII O. Hoffm., n. sp.

Annua gracilis humilis erecta a basi vel superne ramosa, pilis brevibus hispida, foliis parvis appresse strigulosis, basi lata sessilibus, ambitu oblongis, pinnatim 5-fidis, rhachi lineari, segmentis brevibus acutis vel subobtusis, latitudine circiter quartam rhacheos partem æquantibus; foliis floralibus lanceolatis integris; capitulis ad apices caulis et ramorum glomeratis vel ad ramos inferiores solitariis, plus minus evidenter pedicellatis, superioribus sessilibus, involucri squamis oblongis acutis viridibus, margine albo-hyalino cinctis, apicem versum pubescentibus pluri- (ca. 5-) nerviis, nervo mediano crassiore subcarinatis, floribus paulum exsertis, corollis (e sicco) albis; pappo niveo.

Allied to *Tr. euphrasiodes* Bert., a species doubtfully pronounced perennial by De Candolle, and enumerated among the perennial forms by Philippi; but, according to the specimens in the Berlin Herbarium, annual. Its leaves, however, are petiolate, and more pinnately parted, and its lobes may be 12, as against 2 in our plant. *Tr. andinum* Phil., very similar in habit, is distinguished by the spinose bracts and leaf-segments.

76. STRONGYLOMOPSIS Speg.

Habit, head and flowers as *Nassauvia*, Sec. *Strongyloma;* but *pappus* none.

S. FUEGIANA Speg.

Perennial, loosely cespitose, the branches suberect, short. *Leaves* nearly isomorphous, elongate, linear-subulate, trigonous, acute. *Heads* sessile at ends of the branches, mostly solitary. *Involucral* scales usually 6-seriate, glabrous, the three outer small. *Flowers* 5, corollas bilabiate, white; *achenes* silky-pubescent.

Golfo de S. Sebastian, E. Fuegia. Stems woody, tortuose. Habit of *N.* (*Strong.*) *patagonica* Speg.

77. AMEGHINOA Speg.

(Allied to *Nassauvia.*) *Head* discoid, equal-flowered; *flowers* numerous, hermaphrodite, fertile. *Involucre* campanulate; its scales about 1-seriate, with a few outer and shorter additional. *Receptacle* naked, alveolate. *Corolla* bilabiate, the outer lip 3-toothed; the inner narrowly 2-toothed. *Anthers* with a scarious, lanceolate, inferior appendage, attenuate-petiolate, as long as itself, basi-sagittate, and produced in barbellate tails nearly as long. *Style-branches* short, terete, truncate. *Achenes* subturbinate, costate, truncate above. *Pappus-setæ* 1-seriate, denticulate.

A small shrub, with subcoriaceous, dentate or lobed, spinulose leaves. Heads partly corymbed at the tops of the branches, briefly peduncled or sessile. Corollas ochroleucous. Achenes puberulo-hispid.

Only one species, viz.:

A. PATAGONICA Speg.

Branching shrub, nearly 1 meter high. *Leaves* subsessile, broad-ovate, pinnately lobed; the lobes entire, spinulose-mucronate, more or less laxly and minutely glandular-hispid. *Bracts* lanceolate, acute, carinate, dorsally glandular-pulverulent.

S. Patagon., by Rio Deseado.

78. LASIORRHIZA Lag. (1811. *Leucheria* Lag., same date, but without species. *Leuceria*, Auct. *Chabræa* DC., 1812.)

Heads homogamous, radiatiform, or flowers subequal. *Involucre* broad, its scales few-seriate, imbricate, lanceolate, herbaceous, the inner apically scarious. *Receptacle* naked or with few pales near its border. *Corollas* bilabiate. *Anthers* with long tails; *style-branches* truncate. *Pappus-setæ* 1-seriate, united at base. Achenes obovoid or oblong, papillose or finely villous, the ribs not prominent.

Herbs more or less woolly. *Leaves* often radical. Heads mid-sized and panicled, or larger and solitary on scapes, purple or pink to white. (The Patagonian forms have the heads usually solitary.)

Species 60, in Andes and extratrop. parts of S. Amer. to Patagon., Fuegia and Falklands.

Key to the Species.

- *A*. Stems developed.
  - *b*. Subglabrous, branching. Leaves bipinnatifid, segments linear; upper leaves simpler. Heads long-stalked. *anthemidifolia.*
  - *b2*. Sparsely hairy. Leaves pinnatipartite, the upper sessile segments rounded. Heads large. *suaveolens.*
  - *b3*. Woolly.
    - *c*. Stem simple.
      - *d*. Leaves bipinnatifid; segments ovate. *achillæifolia.*
      - *d2*. Cauline leaves broad-lanceolate. *gossypina.*
      - *d3*. Stems many from a rhizome. Lower leaves linear or broader. Flowers red. *hahnii.*
      - *d4*. Stems many scapiform. Leaves lyrate to spatulate, toothed, etc. Heads small; flowers white. *gracilis.*
    - *c2*. Stems low.
      - *d*. Cauline leaves linear, bipinnatifid. Flowers white. *ibari.*
      - *d2*. Leaves pinnatifid-incised to spatulate. Bract half-way on the scape. Flowers white to pink. *lanata.*
      - *d3*. Branches crowded, leafy. Leaves ovate, cleft. Head subsessile. *leontopodiodes.*
      - *d4*. Stems leafy. Leaves pinnatisect; segments 4 pairs, short; the lower leaves smaller. Peduncles solitary. Flowers yellow-red. *lanigera.*
  - *b4*. Leaves tomentose underneath, pinnatifid, auricled, semiamplexicaul. *stricta.*
- *A2*. Stemless. Woolly.
  - *b*. Leaves lanceolate-linear, entire. *patagonica.*
  - *b2*. Leaves some pinnatifid, mostly oblanceolate, entire. Flowers pink. *fuegina.*

*b*3. Leaves pinnatifid.
  c. Lobes 5 pairs, entire, with a terminal 3-lobed. *candidissima.*
  *c*2. Lobes 6–8, imbricate. Scapes in pairs. Flowers dark-purple. *hoffmanni.*
*b*4. Leaves pinnatisect; segments 7 pairs, 3-lobed. Flowers purple. *purpurea.*
*b*5. Woolly and green. Leaves pinnatisect, the lobes 3-lobed, decussate-imbricate. Flowers white to pink. *scrobiculata.*

1. LASIORRHIZA ACHILLÆIFOLIA (Hook. & Arn., sub *Leuceria*).

Stem slender, 15–20 cm. high, dichotomously branching, puberulous. *Leaves* remote, bipinnatifid, the segments small, ovate, obtuse, their axils and rachis rather woolly. *Involucre* campanulate, its scales linear-oblong, obtuse, tuberulous. *Ligules* oblong.

Patagon., at Puerto Deseado.

2. L. ANTHEMIDIFOLIA (Phil., sub. *Leuceria*) O. Ktze.

Low perennial to 25 cm. high, branching from the base, rather glabrous, glandular. *Leaves* of linear outline, bipinnatifid, the segments linear, entire or incised, acute. Lowest leaves long petioled, the upper sessile and gradually simpler, lastly linear bracts. *Heads* with rather long peduncles; *involucral* scales dorsally and apically glandular; the inner with scarious sides.

Patagon., near Lago Pinto.

3. L. CANDIDISSIMA (Gill. & Don., sub. *Leuceria*).

Stemless, with snowy wool. *Leaves* incised pinnatifid; the lobes, 5 pairs, ovate-oblong, acute, entire, and a terminal 3-lobed part. *Scape* nearly naked, 1-headed.

(Chili; Argent.); S. Patagon., by head of Rio Chico (J. B. Hatcher, Feb. 9, 1897); Fuegia. (Fuegian specimens are lower, with fewer lobes of leaves and less deeply cut; often like *L. hahni*, having some entire radical leaves. Speg.)

4. L. FUEGINA (DC., sub *Chabræa*) O. Ktze.

Stemless, arachnoid-woolly. *Leaves* erect, the lowest pinnatifid, but most oblanceolate, attenuate to a long petiole, entire. *Peduncles* radical, nearly leafless, 1-headed. *Involucral* scales rather obtuse. *Ligules* pink. Near *L. candidissima*).

(Chili); Patagon.; E. and N. Fuegia; Magellan (Dusén).

5. LASORRHIZA GOSSYPINA (H. & A., sub *Leuceria*).

Densely woolly. *Stem* simple, leafy, 1-flowered. Radical leaves? *Cauline leaves* very broad-lanceolate, acuminate, rather naked upwards. *Involucre* campanulate, its scales oblong-lanceolate, obtuse, nearly as long as the flowers. Ligules oblong.

Falklands.

6. L. GRACILIS (Alboff, sub *Leuceria*). (DC., sub *Chabræa*.)

Green, 16–30 cm. high, with many stems, slender, scapiform, having 1–3 narrow, linear bracts, or bractless, sparsely woolly or hairy. *Leaves* slender, membranaceous, lyrate or spatulate, entire or sparingly toothed, or pinnately incised or partite. *Heads* rather small, slender, with white flowers.

Fuegia, valley of Olivaia on Beagle Channel.

7. L. HAHNII (Franchet, sub *Leuceria*).

Rhizome thick, many-stemmed, covered by black remains of leaves. Plant white-woolly. *Stems*, 30 cm. high, 1-headed, nearly naked above. *Floral leaves* linear or oblong-spatulate, attenuate-petiolate, petiole widening below. *Head* 20 mm. in diameter. *Involucral* scales 2-seriate, outer obtuse, inner acutish. *Receptacle* naked. *Flowers* bilabiate, subequal, bright red. *Achenes* scabrid. *Pappus* of white barbellate hairs, rufous at tip.

Fuegia, Beagle Channel, at Lapataia and Ushuaia; S. Patagon., at head of Rio Chico (Hatcher, Feb. 11).

8. L. HOFFMANNI (Dusén, sub *Leuceria*).

Low, 4–5 cm., woolly. *Leaves* radical, rosulate, pinnatifid; their segments 6–8, oblong, elliptical, imbricate, the uppermost at least incised; sheaths exceeding the laminæ, 5–7-striate, woolly-margined. *Scapes* in pairs, as long as the leaves, 1-headed, with 1–2 linear leaves. *Heads* hemispherical. *Bracts* 2-seriate, acute, 3-nerved, woolly on the outside. *Rays* black-purple, linear, cochleate-revolute. *Achene* papillous. *Pappus* snow-white.

S. Patagon., Cerro-peliki, to 500 m. of elevation. (O. Nordenskjöld.)

9. LASIORRHIZA IBARI (Phil., sub *Leuceria*).

Perennial, with low *stem*, corymbosely branching, base and petioles white-woolly. *Basal leaves?* Cauline leaves, linear in outline, bipinnatifid, the lower semiamplexicaul. *Heads* very shortly pediceled. *Involucral* scales, gland-puberulous, purplish at margins. *Corollas* white.

S. Patagon., at Rio Sta. Cruz; Chubut.

10. L. LAÑATA (Alboff, sub *Leuceria*).

Low, 8–12 cm., woolly, very variable. *Leaves* varying as to woolliness, deeply pinnatifid-incised, or pinnatifid, or lyrate, or spatulate. *Scape* low, white, with a linear bract half-way up. *Ligules* exceeding the involucre, white to deep pink.

Fuegia, heights above Ushuaia.

Allied to *L. purpurea*, and *L. candidissima*, and *L. fuegina;* all may form a single species.

11. L. LANIGERA (O. Hoffmann, sub *Leuceria*).

Low, 7 cm., woolly, bearing few, short, leafy stems. *Cauline* leaves pinnatipartite, segments 4 pairs, short-elliptical, entire (or the upper incised), imbricate, the sheath longer than the lamina, many-striate, webby; lower leaves with smaller lamina. *Peduncles* solitary, as long as the leaves. *Heads* mid-size, with yellow-red, linear-oblong rays. *Involucre* hemispherical, its scales 1–2-seriate, oblong, acute, the outer webby, nerves 3, dark. Achenes granulate. *Pappus* snow-white.

S. Patagon., Cerro-paliki, at 450 m. elevation (O. Nordenskjöld).

12. L. LEONTOPODIOIDES O. Ktze.

Perennial, low, 15 cm., woolly, with crowded, leafy branches. *Leaves* hidden in wool, with lamina 5 mm. long, ovate, 6–8-cleft; petiole 25 mm., its base sheathing. *Head* solitary, terminal, subsessile, campanulate, 10 mm. high by 15 mm. broad. *Involucral* scales 2-seriate, lanceolate. *Flowers* bilabiate, the outer ligulate. *Achenes* narrow-turbinate, verrucose. *Receptacle* naked. *Pappus-setæ* many.

S. Patagon., at Cerro Toro.

13. L. PATAGONICA (Speg. sub *Leuceria*).

Stemless. *Leaves* all radical, rosulate, lance-linear, entire, subacute, densely webby and white-woolly. *Scape* woolly, exceeding the leaves;

simply 1-headed. *Involucre* 1–2-seriate. Ray-flowers exceeding the disk, with no chaff between the outer flowers.

S. Patagon., by Lago Argentino; E. Fuegia (Dusén).

14. LASORRHIZA PURPUREA (DC. sub *Chabræa;* H. & A. sub *Leuceria*).

Stemless, with woolly base, scape and petioles. *Leaves* pinnatisect, their segments about 7 pairs, distant, 3-lobed. *Scape* 1-headed. *Ray* of ligulate purple flowers.

N. and E. Fuegia, Magellan., Patagon., by Hatcher in valley of Rio Sta. Cruz, January 16. "Chiefly in the steppe-region." (See *L. lanata.*)

15. L. SCROBICULATA (DC. sub *Chabræa*).

Stemless, green and woolly. *Leaves* deeply pinnatifid, their lobes 3-lobulated, decussate-imbricate. *Scape* nearly naked, 1-headed; it and involucre laxly woolly. *Flowers* nearly white to deep pink.

(Chili); S. Patagon., in valley of Rio Sta. Cruz, 100 miles (160 km.) above its mouth.

16. L. STRICTA (Phil. sub *Leuceria.*)

Perennial; stem strict, hirtellous, with very short, glandular hairs. *Leaves* above green, subglabrous, underneath webby-tomentose and hoary; radical leaves . . .; lower, cauline leaves oblong-linear in outline, pinnatifid, with narrow segments, long-acuminate, entire or few-toothed, basally much narrowed, with small, semi-amplexicaul auricles; auricle of upper leaves broader than the rest of the leaf, generally orbicular and spiny-toothed; uppermost leaves minute, consisting of a very broad auricle and a tip. Branches of *corymb* 1–2-flowered. *Involucral* scales very lax, 12 mm. long, their apex glabrous. *Ligules* blue (?), with their tube 15 mm. long. *Head* broad, 28 mm. diam.

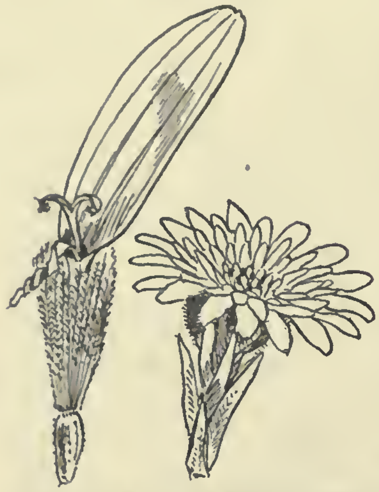
W. Patagon., by Rio Palena; corymbs with 10–12 heads. Chubut, "My specimens have more heads in the corymb, the heads smaller and the stems thicker; approaching *L. magna* (?)," Speg.

17. L. SUAVEOLENS (DC. sub *Chabræa*).

Very woolly. *Stem* simple, leafy, 1-headed. *Leaves* pinnately parted, the lower petiolate, the upper sessile and semi-amplexicaul; their lobes subrotund, entire. *Heads* large, 35 mm. in diameter, long-rayed. Involucral scales sublinear, immersed in wool, which abounds at top of the thickened scape. (Fig. 106.)

Falklands; ornamental on grassy hills, and fragrant.

FIG. 106.



Lasiorrhiza (*Chabræa*) *suaveolens.*— Flower-head, and one of the flowers. (From *Flora antarctica.*)

79. PEREZIA Lag.

Acaulescent, cespitose, or caulescent, rarely shrubby; with entire or pinnatifid *leaves*, their margins often ciliate-spinose. *Heads* homogamous, mostly many-flowered, moderate-sized, sometimes rather large and solitary on a leafless, bracteolate, scape-like peduncle, or panicled, rarely clustered on axillary branches. *Involucre* 2–many-seriate, its scales imbricating. *Flowers* pink to purple, white or blue (not yellow), the outer lip longer both in the head and in the homochromous ray. *Style-branches* truncate, with terminal hairs. *Receptacle* plane, naked or pilose. *Fruit* not beaked, papillose or hairy. *Pappus* setose, several-seriate. (Section *Clarionæa*, with glabrous receptacle; and section *Homoianthus*, with hairy-fimbrilliferous receptacle.)

Species 75, from Arizona and Texas to Patagon.; most in the Andes, a few in S. Brazil.

KEY TO THE SPECIES.

- *A*. Erect. Stem or its branches 1-headed.
  - *b*. Glabrous.
    - *c*. Leaves lanceolate, entire, petiolate. The cauline sessile, cordate-sagittate. *lactucoides.*
    - *c2*. Leaves linear, with marginal spines; the upper sparse, erect. *linearis.*
    - *c3*. Leaves pinnatisect, lobes spiny-tipped. Cauline linear, and spiny. *lechleri.*
  - *b2*. Pubescent upwards. Leaves chiefly basal, pinnatisect, the segments mucronate. Head nodding, blue. *pedicularicæfolia.*
- *A2*. Erect; heads few. Leaves pinnatipartite; lobes ovate. Involucre scales short. *brachylepis.*
- *A3*. Ascending. Leaves sessile. Flowers blue.
  - *b*. Leaves linear, entire, apically white-mucronate. Scapes with broad leaves. *patagonica.*
  - *b2*. Leaves broad-linear, recurved, with marginal spines. Peduncle nearly naked. *recurvata.*
- *A4*. Cespitose perennial, glabrous, with wool on the petioles. Leaves narrow-linear, entire. Heads sessile amid the upper leaves, white. *sessiliflora.*

*A*5. Glandular. Stems scapiform.
- *b*. Leaves spatulate, toothed. Scape 1–2-leaved. Head rather large, lilac. *megalantha.*
- *b*2. Basal leaves pectinate, sessile. Scape with a broad bract and others smaller. Flowers pink. *oleracea.*
- *b*3. Basal leaves pinnatipartite, the lobes entire, spiniferous. Outer flowers long-radiant. *magellanica.*

*A*6. Dwarf, chiefly glabrous.
- *b*. Leaves subulate, rigid, pungent; the axils woolly. *lanigera.*
- *b*2. Leaves pinnatisect, rigid; lobes spiny-tipped; petiole and involucral scales setiferous. Flowers blue. *pilifera.*
- *b*3. Subfruticose. Leaves oval, acute, sessile, spiny-toothed. Heads terminal, crowded. *pygmæa.*

1. PEREZIA BRACHYLEPIS Phil.

Stem erect, few-leaved, with few *heads*, scarcely scabrous. *Leaves* thin, the basal pinnatipartite, lobes ovate, broadly adnate at their base, sinuate-dentate. Cauline leaves auricled-amplexicaul, gradually becoming simpler. *Involucral* scales rather short, linear, rounded-acute.

Valdivian Andes. Plant 60 cm. high, the involucre only 11 mm. Chubut Mts. "Here with scales of the involucre slightly pubescent." (Speg.).

2. P. LACTUCOIDES Less. (*Homoianthus magellanicus* DC.)

Glabrous, with simple, erect, leafy stem, 1-headed; to 60 cm. high. *Leaves* entire, radical ones petiolate, lanceolate; cauline semiamplexicaul, cordate-sagittate, oblong-lanceolate. *Involucral* scales 3-seriate, laxly imbricate, ovate, acuminate, their margin finely denticulate, fimbriate.

S. Patagon., at Cabo Negro; Magellan; E. and S. Fuegia. (Dusén.) "Two plants of different sizes are included in this; except however in size I am unable to distinguish them." (J. D. Hooker.)

3. P. LANIGERA Hook. & Arn.

Dwarf, nearly stemless, scarcely 25 mm. high, cespitose. *Leaves* exceeding the stem, subulate, rigid, pungent, the margin revolute, glabrous, entire, their base dilated-amplexicaul; their axils woolly. *Involucral* scales oblong, mucronate, all entire.

S. Patagon., by Puerto Deseado.

4. P. LECHLERI (Sch. Bip., sub *Clarionæa*) Phil.

Elegant, glabrous perennial, 3–5 cm. high, having a rhizome with long fibres, the basal *leaves* rosulate, very numerous, pinnatisect, their lobes oblong-lanceolate, entire or 1-toothed, ending in a whitish, strong spine. Petiole broad, ciliate. *Stems* 1–4, 1-headed, scarcely exceeding the leaves, bearing linear, ciliate-spinose leaves. *Heads* showy. *Involucre* hemispherical; its scales oblong-lanceolate, greenish-blue, margins scarious-white, apex pungent, yet snowy. *Receptacle* small, naked. *Achenes* silky. *Pappus* sordid.

Magellan, Punta Arenas.

5. PEREZIA LINEARIS Less.

Stem erect, simple, 1-headed, or with many-leaved, 1-headed branches. *Leaves* coriaceous, linear, acute, glabrous, rigidly and equally ciliate on margin; the lowest crowding, spreading; the upper sparse, erect. *Involucral* scales 3–4-seriate, imbricate, the outer ones rigidly and regularly ciliate, as are the leaves, the innermost marginally ciliate.

(S. Chili, on ground amidst rocks on the mountains); W. Patagon., in upper valley of Rio Aysen, and N. Patagon., by Lago Nahuel-huapi (Dusén); Chubut, amid dry, hilly rocks.

6. P. MAGELLANICA (Linn. f.) Lag. (DC. sub *Clarionæa.*)

Radical *leaves*, pinnately parted, the parts entire, ciliolate, ovate, the terminal subrotund. *Stem* scapiform, 2–3-leaved, pilose-glandular, with solitary, terminal head. *Involucral* scales 2-seriate, the outer short, spreading. *Outer flowers* long-radiant.

W. Patagon.; E. and W. Magellan; Fuegia to Cape Horn; Staaten I.

7. P. MEGALANTHA Speg.

(*Clarionæa.*) Stemless, glandular-hispid. Rootstock branching. Radical *leaves* 30–40 mm. long, spatulate, toothed. *Scape* much exceeding the leaves, 1–2-leaved, simply 1-headed. *Head* hemispherical-campanulate, rather large. *Involucral* scales several-seriate, membranaceous, pubescent. *Corolla* lilac.

S. Patagon., by Lago Argentino; Valley of Rio Gallegos.

8. P. OLERACEA O. Ktze.

Glandular-hairy. *Radical-leaves* rosulate, pectinate, sessile, 5 by 2 cm. *Scape* 10 cm. high, bearing a cordate-ovate acute bract remote from the solitary, terminal *head*, and 2–3 broader, smaller, more lacerate, approximate bracts. *Head* very large, 3 cm. broad, 4 cm. high. *Involucral* scales not spinose, several-seriate, the outer green, lacerate, broader than long, the inner narrowing. *Flowers* pink, all bilabiate, outer lip larger, 3-toothed, inner much smaller, 2-parted. *Achenes* young, silky, strigose. *Pappus-setæ* numerous, yellow, scabrid, 15 mm. long. ("Involucre as in *Cirsium oleraceum*.")

Patagon (M. & T.).

9. PEREZIA PATAGONICA Speg.

(*Homoianthus.*) Cespitose-effuse, prostrate-ascending, 1–6 cm. high. *Leaves* imbricate, linear, amplexicaul, thick, entire, revolute, white-mucronate apically. *Scapes* erect, long, with 3–5 ovate-cordate leaves, marginally uncinate-ciliolate. *Head* solitary, campanulate, outer *involucral* scales like the leaves of the scape, recurved-denticulate; inner scales lanceolate, straight, acute, spinescent. *Flowers* blue.

Patagon., by Golfo de San Jorge; on maritime dunes near mouth of Rio Sta. Cruz.

10. P. PEDICULARIÆFOLIA Less.

Rhizome thick. *Stem* simple, striate, 10 cm. high, pubescent upwards, 1-*headed.* *Leaves* crowded at base, few upwards, pinnatisect, segments and teeth mucronate. Head nodding. *Involucre* turbinate-campanulate; its scales few-seriate, shorter than the flowers, acuminate. *Corolla* blue, outer lips oblong-elliptical. *Pappus* yellow. *Achenes* yellow-villous.

(Chili); Patagon.?

11. P. PILIFERA (Don. sub *Clarionæa*).

Stem short, 3–5 cm., 1-*headed.* *Leaves* subradical, pinnatisect, glabrous, rigid, the lobes lanceolate, undivided or 2-lobed, ending in a long seta, petiole broad, bristly ciliate. *Involucre* cylindrical, its scales scarious-margined, produced into a seta, the outer spreading. *Flowers* blue.

(Chili); S. Patagon.; Fuegia, passim; heights above Ushuaia; "chiefly in the steppe-region and with *Azorella glebaria*." (Dusén.)

12. P. PYGMÆA (Cass. sub *Triachne*) Hook. f.

Small, 5 cm. high, subwoody. *Leaves* sessile, imbricate, oval, acute, coriaceous, at base toothed-ciliate, apically recurved. *Heads* terminal, crowded; *involucre-scales* numerous, mucronate.

Fuegia, on mountain-top, near Blossom Bay.

13. PEREZIA RECURVATA (Vahl) Less. (*Homoianthus echinulatus* Cass.) (Plate XXIX.)

Stem ascending, glabrous, densely leafy, the *leaves* semi-amplexicaul, broad-linear, recurved, with spines beneath. *Peduncle* nearly naked, or with scattered bracts, 1-*headed*. *Involucral* scales 3-seriate, the outer spinulose-toothed. *Flowers* light blue. To 30 cm. high, the peduncle being half of this, or shorter. (Fruit scarcely hairy, but finely papillose. G. M.)

(Chili; Argentina); Patagon., by Hatcher at Cabo Negro and in the Cordilleras; Fuegia, on Beagle Channel, and passim; Navarin I.; Magellan; Falklands.

"One of the most interesting plants of the Falkland Islands, from the very sweet scent of its large, pale-blue flowers, which have been compared to Jessamine and the Violets. It generally grows near the sea in rocky places." (J. D. Hooker.)

14. P. SESSILIFLORA Speg.

(*Homoianthus.*) Cespitose perennial. *Branches* short, imbricating, leafy. *Leaves* glabrous, narrow-linear, not spreading, sessile, dilated into a periclad, with long, cottony wool underneath, scarcely mucronulate, margin revolute, entire. *Heads* solitary, sessile amid the upper leaves. *Involucral* scales ovate-lanceolate, spinulose-mucronulate. *Flowers* 10–12, white.

Patagon., by Golfo de San Jorge; Rio Deseado; Rio Sta. Cruz; in upper valley of Rio Gallegos (Nordenskj.).

80. HYPOCHŒRIS Linn.

Usually perennial herbs, with scapose, often branching stems, and basal *leaves*, pinnatifid to entire; the scapes with few, small leaves or none. *Heads* mostly large, long-peduncled. *Flowers* yellow. *Involucral* bracts many-seriate, appressed. *Receptacle* chaffy. *Anthers* sagittate. *Style-branches* obtusish. *Achenes* 10-ribbed, more or less beaked. *Pappus* plumose.

Species 50, Eurasia and S. Amer.; 1 naturalized in N. Amer. (Sec. *Achyrophorus*, once deemed a genus, having a seriate pappus, includes most of the S. American forms.)

KEY TO THE SPECIES.

A. Stem leafy, 1-headed. Leaves fleshy, subentire. Involucre-scales lanceolate, acute. *brasiliensis.*
A2. Stem branching. Leaves long-lanceolate, pinnatifid.
  b. Involucral scales linear, blackish. *apargioides.*
  b2. Outer involucral scales obtuse, reddish. *tenerifolia.*
A3. Stem simple, 1-headed. Leaves mostly radical; also bract-like, cauline leaves.
  b. Radical leaves short, acute, entire. Involucral scales black, woolly. *palustris.*
  b2. Radical leaves sublanceolate to pinnatifid.
    c. Involucre campanulate. Scape tall. *arenaria.*
    c2. Involucral scales obtuse, woolly. Head largish. *philippii.*
A4. Stem simple, 1-headed. Leaves radical.
  b. Leaves narrow-linear, subentire.
    c. Involucral scales large, mealy at base. *hookeri.*
    c2. Involucral scales webby, setose. Stem villous. *ibari.*
  b2. Leaves narrow-linear, pungent, pinnatifid, golden. *incana.*
  b3. Leaves long-linear, glabrous. Flowers white. *leucantha.*
  b4. Leaves lanceolate, sinuate-dentate. Head large. *odorata.*
  b5. Leaves linear. Involucral scales linear-lanceolate, rough. *coronopifolia.*
  b6. Leaves grass-like, filiform to broad-linear, sometimes pinnatifid. Involucral scales acuminate, webby. *tenuifolia.*

1. HYPOCHŒRIS APARGIOIDES (Less.) Gris.

Stem branching, glabrous or subhispid; branches rough under the heads. *Leaves* radical, hispidulous, long-lanceolate, pinnatifid; their lobes acuminate or obtuse, the uppermost linear, entire. *Involucral* scales blackish, hispidulous, linear, obtuse or subacuminate.

(Chili): N. Patagon., near Rawson, at mouth of Rio Chubut; S. Patagon. A form with the outer involucral scales broader, and the leaves less divided, is found in Chili, and by Buenos Ayres, and may be in N. Patagon.

2. H. ARENARIA Gaud.

Sparingly hispid, or smooth; root long, its neck 1–3 parted. *Leaves* radical linear-obovate, lanceolate, long-petiolate, obtuse or acuminate, sinuate-dentate or pinnatifid. *Scape* exceeding the leaves, naked or with 1–2 minute leaves, with 1 terminal *head*. *Involucre* campanulate, its scales tomentose to glabrate, the outer sparsely hispid-pilose.

(Chili); S. Patagon., in valley of Rio Baguales (Nordenskj.), Cabo Negro (Hatcher): Magellan: Falklands; S. Fuegia, by Ushuaia, "rather glabrous with leaves oboval-lanceolate, entire, or runcinate-pinnatifid, dentate or incised." (Alboff.) At Killikaike, Rio Gallegos (Barnum Brown); style-branches large, clavate, dark-brown in this (G. M.).

3. HYPOCHŒRIS BRASILIENSIS Griseb. (*Achyrophorus chondrilloides* Gray.)

Glaucescent, glabrous, root fusiform. *Stem* leafy, strict, 1-headed. *Peduncles* elongated. *Leaves* fleshy, linear-lanceolate, entire or obsoletely toothed; the upper subamplexicaul. *Involucral* scales lanceolate, acute.

N. Patagon., by Rio Negro.

4. H. CORONOPIFOLIA (Sch. Bip. sub *Achyrophorus*, 1855).

Root cylindric. *Stem* exceeding the leaves, squamose, glabrous or with sparing, fugacious, white toment, 1-headed. *Leaves* radical, linear, subdentate, glabrous to tomentose. *Involucral* scales imbricate, linear-lanceolate, hispid underneath. *Flowers* golden. *Achenes* nearly beakless. A small bract midway on the stem.

S. Patagon., by Hatcher; S. Fuegia, at Lapataia on Beagle Chan. Magellan (specimen in Gray Herb., along with another specimen from Golden-gate Park, Calif.). Identification verified by Prof. B. L. Robinson of the Gray Herbarium.

(" This and *H. tenuifolia* are mere varieties of *H. variegata* of Baker." Speg.) *H. variegata* Sch. Bip., 1859, of Argentina, is a synonym. See *H. tenuifolia.*

5. H. HOOKERI Phil.

Webby. Leaves glabrous, radical, erect, as long as the 1-headed scape, narrowly linear, entire or with a few setiform teeth. *Involucral* scales large, mealy tomentose at base; the inner narrow, acuminate.

(Chili); Patagon. (M. & T.)

6. H. IBARI Ph. (*Achyrophorus*).

Stem solitary, 1-*headed*, villous, leafless. *Leaves* narrow-linear, entire or few-toothed. *Involucral* scales densely webby, dorsally setose, black-green, acuminate. *Pales* broad at base, somewhat toothed, and then narrow.

S. Patagon., by Rio Sta. Cruz; Magellan.

7. HYPOCHŒRIS INCANA Hook & Arn. (*Achyrophorus*).

Hoary, with deciduous tomentum. The golden radical *leaves* narrowly linear, subulate-pungent, pinnatifid. *Scape* leafless, 1-headed.

(S. Amer. at San Julian); S. Patagon., by Rio Gallegos; and Rio Sta. Cruz.

8. H. LEUCANTHA (Speg. sub *Achyrophorus*).

Leaves all radical, long-linear, 12–24 mm. long, acute, attenuate below, 1-nerved, entire, glabrous. Scapes simple, 1-headed, exceeding the leaves, glabrous below, white webby above, with few prickles. *Head* campanulate. *Involucral* scales lance-linear, narrow, obtuse, white-webby on the margin, dorsally obscure, green, 1-nerved, costate with prickles in the costa. *Corolla* white; *anthers* rose-white. *Style-branches* connivent, exsert, black-purple.

Patagon., by Golfo de San Jorge; Rio Chubut.

9. H. MAGELLANICA (Schultz, sub *Achyrophorus*).

(Perhaps a variety of *H. tenuifolia.*)

10. H. ODORATA (Walp. sub *Achyrophorus.*)

Stem solitary, simple, leafless, setose-hispid. *Leaves* lanceolate, sinuate-dentate, both sides smooth, villous at the mid-rib, margin scabrid. *Head* large. *Involucre* with outer scales, setose-hispid, gradually shorter, imbricate. *Pappus* plumose, having about 20 equal, with or without intermediate shorter, setæ.

(Chili), Patagon. (?)

11. H. PALUSTRIS (Phil. sub *Achyrophorus*).

Glabrous. Stem erect, simple, 1-*headed*, nearly leafless. *Radical leaves* short, acute, gradually attenuate below, subsessile, entire. *Cauline* leaves linear-subulate, crowded under the involucre, which is blackish, woolly ciliate externally, scarcely hispidulous on the back of the scales. *Achenes* shortly rostrate. *Pales* of receptacle long, with long awns.

N. Patagon., by Valdivia; N. Fuegia. (Dusén.)

12. H. PHILIPPII O. Ktze. (*H. grandiflora* Phil., non Led.)

Root simple. *Leaves* chiefly rosulate, glabrous or sometimes ciliate, linear-lanceolate, and entire, or oblong, or pinnatifid, with obtuse segments. *Scape* little exceeding the subulate leaves, webby above, 1-*headed.* *Involucral* scales moderately large, numerous, oblong-linear, obtuse, basally floccose, truncate, without setæ. *Ligules* twice as long. Fruit? (Argentina.)

HYPOCHŒRIS PHILIPPII GLABRESCENS O. Ktze.

Involucral scales broader, glabrescent, the lower ovate.

Patagon (M. & T.).

13. H. TENERIFOLIA. (Remy, sub *Achyrophorus*.)

Stem nearly simple, over 30 cm., glabrous, except at the apex. *Radical leaves* of lance-linear outline, attenuate to a long petiole, weak, pinnatifid, with narrow, oblique lobes; cauline subentire. *Involucral* outer scales obtuse, pilose with reddish exterior; inner membranaceous-margined. Valdivia; Chiloe; S. Fuegia (Dusén).

14. H. TENUIFOLIA (DC. Prodr. sub *Achyrophorus*, 1838) Gris.

Glabrous or subarachnoid. *Stem* simple. *Leaves* grass-like, radical, filiform to linear-lanceolate, entire or sinuate, or pinnatifid, segments linear. *Scape* 1-headed. *Involucre* ovate-campanulate; its scales linear to linear-lanceolate, acuminate, webby and basally hispid. Variable.

S. Patagon., Magellan; Elizabeth I. (See note under *H. coronopifolia*. Accepting Spegazzini's view, we have *H. tenuifolia* DC. as the species, with varieties *coronopifolia* and *variegata*.)

81. TARAXACUM Hall. (1768. Linn. sub *Leontodon* 1753.)

Herbs, with milky juice and radical, toothed to runcinate-pinnatifid leaves. *Scapes* leafless, with 1, rarely 2–3 heads, which are midsize to large, yellow. *Involucre* campanulate to oblong, with 1-seriate, erect scales (changing in fruit), and several-seriate, shorter outer scales, usually recurved. *Achenes* oblong, 4–5-angled, apically muricate and rostrate, supporting the copious, slender, capillary *pappus*.

Species 40, in north-temperate and cold climate; few in south-temperate, rarely in the tropics. (Fig. of fruit in Eng. & Prantl, iv, 5, p. 367, D.)

1. T. IBARI Phil.

Glabrous, with runcinate *leaves* (narrower than of *T. taraxacum*). *Scape* scarcely exceeding the leaves. *Scales* of involucre imbricate, all appressed, the outer ovate-lanceolate, acuminate; the inner broad-white, scarious. *Achenes* strongly ribbed, costæ spinulose at apex. *Rostrum* as long as the achene.

Magellan, at Rio Blanco.

2. TARAXACUM MAGELLANICUM Comm.

Petioles slender, elongated. *Leaves* rounded apically. *Involucral* scales all erect, the outer white-red, scariously margined.

(Argentine pampas); Magellan, by Punta Arenas.

3. T. TARAXACUM (L. sub *Leontodon*) Karst. (*T. officinale* Web.; *T. dens-leonis* Desf.) Dandelion.

Root thick, deep. *Leaves* in outline oblong to spatulate, pubescent when young, irregularly pinnatifid or sinuate-toothed, rather succulent, narrowed to the petiole. *Scape* erect. *Head* solitary, 25–50 mm. broad; flowers golden. *Outer involucre* reflexed. *Achenes* muricate at top, narrowing to the long, filiform *rostrum*.

(Eurasia and N. Amer.) Patagon., Magellan (Dusén); Fuegia; Falklands (introduced).

4. T. TARAXACUM LÆVIGATUM (W. sub *Leontodon*) O. Ktze.

Glabrous. *Leaves* runcinate-pinnatipartite, lobes unequal, lanceolate, acuminate, subdentate. *Involucral* scales subcorniculate, callous-tipped, the outer spreading. *Achenes* pale, with *rostrum* longer than in the type.

(Eurasia, in meadows and dry pastures); Patagon.; Magellan; Fuegia, passim, alpine about Ushuaia; Falklands.

5. T. TARAXACUM ALPINUM (Koch.) Porter.

Outer *involucral* scales spreading, ovate or narrower. *Leaves* very deeply parted. *Achenes* pale brown.

(Europe; Labrador; and by Rockies and Calif. southwards.) S. Patagon., by Hatcher at Coy Inlet and Punta Arenas.

82. SONCHUS Linn.

Succulent herbs, with milky juice and alternate, mostly auriculate, amplexicaul *leaves*, entire or toothed, or lobed, and prickly-margined. *Heads* large or midsize, corymbose, yellow. *Involucre* ovoid to campanulate, its scales many-seriate, imbricated, smaller outwards. *Receptacle* naked. *Anthers* basisagittate. *Achenes* flattish, 10–20-costate, truncate. *Pappus* copious, white, capillary, usually deciduous together.

Species 5, of Old World.

1. SONCHUS ASPER (L.) Allioni.

Annual. *Stem* leafy below. *Leaves* undivided or pinnatifid, spinulose-toothed; the lower petiolate, the upper clasping, with rounded auricles; obovate to oblong or lanceolate. *Achenes* ribbed, but not transversely wrinkled.

Cosmopolitan. N. and S. Patagon.; "naturalized and spread over tropical and temperate South America; probably to a great extent without the agency of man." (J. Ball.)

2. S. OLERACEUS Linn. Sow-thistle.

Basal and lower *leaves* petioled, lyrate-pinnatifid, 10–25 cm. long, the terminal segments usually large and triangular. Upper leaves pinnatifid, with acute, clasping auricles. *Achenes* ribbed, and transversely wrinkled.

Patagon. (M. & T.; by Hatcher on edge of a marsh, nearly a meter high, in fruit March). A weed in cultivated lands of the Old World and N. Amer.; also naturalized in Patagon. and the Chonos Archip.

83. AGOSERIS Raf. (*Troximon* Nutt., 1813, non Gaertn., 1791. Including *Macrorhynchus* Less.)

Nearly stemless herbs, glabrous to sparsely pilose. *Scapes* erect, leafless, 1-headed. *Heads* midsize to large, liguliferous, mostly yellow. *Involucre* campanulate, its scales many-seriate, the outer smaller. *Receptacle* rarely with some chaff. *Anthers* basally acute or setaceous. *Achenes* glabrous, 10-costate, contracted below, apically rostrate. *Pappus* setose, copious.

Species 25, in W. and S., of N. Amer., and Peraustral Amer.

1. A. AUSTRALIS (Phil. sub *Macrorhynchus*).

Cespitose. *Leaves* arachnoid-hirsute, linear, usually pectinately pinnatifid; with linear segments and linear rachis. *Scapes* scarcely exceeding the leaves, very densely woolly. Outer *involucral* scales hirsute, triangular-lanceolate; inner glabrous and longer, equalling the flowers.

Magellan strait, near Punta Arenas; Falklands.

2. AGOSERIS GLAUCA (Nutt. sub *Troximon*).

Stout, 50–60 cm. tall; pale or glaucous, glabrous or loosely hairy. *Leaves* linear to lanceolate, entire, sometimes dentate or laciniate. *Heads* many-flowered. *Involucral* scales lanceolate or broader, with external shorter scales, often hairy or villous. *Achenes* with beak 10–12 mm. long, exceeding the pappus, which is copious, of stiff, denticulately scabrous setæ.

(Western U. S.); Patagon., Magellan, Fuegia.

3. A. PTEROCARPA (Fisch. & Mey.) (sub *Macrorhynchus*).

Leaves varying, entire, toothed, or usually pinnatifid; always somewhat villous. *Scape* mostly 2–3 times longer than the leaves. *Involucral* scales, outer subsquarrose, villous, white, hirsute. *Achenes* winged, costate, shorter than the rostrum.

(Chili, annual); Patagon., Chubut; E. Fuegia (Dusén).

3. A. PUMILA (DC. sub *Macrorhynchus*).

Sparsely hirsute, with white villosity. *Leaves* narrowly-linear, entire, sinuate, or runcinate-pinnatifid. *Scape* exceeding the leaves. *Involucral* scales linear-lanceolate, leafy, externally glandular-hispid.

S. Patagon.; Magellan; Fuegia, by the Beagle Channel; Falklands, on grassy places by the sea.

84. HIERACIUM Linn. Hawkweed.

Perennials, with double *indumentum*, glandular and stellate, or glabrous; and yellow to reddish *heads* on leafless scapes. *Involucre* of equal, narrow scales, usually also with outer calyculus. *Receptacle* naked. *Achenes* oblong, 10–15-costate, contracted at base, truncate above. *Pappus* of copious setæ, 1–2-seriate, simple, fragile, sordid.

Species 400, in Eurasia, N. Amer., N. and S. Afr., the Orient, Japan and the Andes. (The most difficult of Old World genera.)

KEY TO THE SPECIES.

A. Stem branching.

b. Leaves oblong-spatulate, subentire, with long hairs, and glands. Heads 8–18, small, 1 cm. *chilense.*

b2. Leaves obovate-lanceolate, apiculate. Heads 2–4, small; pubescence mixed. *philippii.*

b3. Leaves oblong-lanceolate. Heads 6 8. Involucral scales linear, with black hairs. *patagonicum.*

*b*4. Leaves oblanceolate, and 1–2 cauline narrow.
  c. Heads sulphur-colored. Involucre hirsute, its scales acuminate. *magellanicum.*
  *c*2. Heads mediocre. Involucral scales linear, hoary. *chubutense.*
*A*2. Scape simple, 1-headed. Leaves oblong to spatulate. Plant all pubescent. *pilosella.*
*A*3. Scape 1-headed, sometimes also a small second. Leaves oblong-spatulate, few-lobed; and some linear on scape. Achenes smooth. *antarcticum.*
*A*4. Stem few-leaved, 1–4-headed. Radical leaves obovate to spatulate, smooth. Involucre with black wool. *triste.*

1. HIERACIUM ANTARCTICUM d'Urv.

Pubescent. *Scape* slender, 10 cm. high, with few, linear *leaves*, and a solitary *head*, less than 1 cm. high, and still narrower, occasionally with a second, smaller head. Calyculus none. *Basal leaves* oblong-spatulate, with few, obscure lobes near the base, obtuse or acutish, nearly glabrate. *Achenes* oblong, truncate, smooth, flattened. *Pappus* unequal.

S. Patagon., by Cape Fairweather; by Hatcher in the Cordilleras, on damp ground; S. Fuegia, alpine (Nordenskj.); Falklands.

2. H. CHILENSE Less.

Stems 30 cm. high, spreading-hirsute, erect, paniculately branching, 8–18-flowered, the branches short, divaricate. *Leaves* oblong-spatulate, briefly attenuate-petioled, obtuse, entire or few-toothed, with long, rigid hairs on both surfaces. Cauline leaves few, narrowing upwards. *Hairs* long, rigid, white, with a black base, having clavate glands between. *Heads* small, 1 cm.

(Chili); Fuegia, Navarin I.

3. H. CHUBUTENSE Speg.

Leaves mostly all radical, oblanceolate, entire, with long, scaberulous, white or rufescent hairs. *Stem* arising from center of leaves, erect, substriate, remotely 1–2-leaved, glabrous; above the middle, laxly corymbose, the branchlets bracteolate and subdichotomous. *Pedicels* 1-headed, hoary. *Heads* erect, mediocre. *Involucral* scales about 1-seriate, linear, dorsally hoary, slightly shorter than the disk.

Chubut, amid grassy rocks at Teka-choique.

4. H. MAGELLANICUM C. H. Schultz.

Perennial, over 20 cm. high, with basal leaves. *Stem* a span high, scapiform, hirsute; with 1–2 bracts, narrowly linear, 2 cm. long. *Leaves* rosular, 10 cm. by 12 mm., oblanceolate, sinuate-dentate, or entire, glabrescent. *Corymb* lax, to 40 cm. long, tomentose-hirsute. *Involucre* campanulate, hirsute, its scales acuminate. *Flowers* sulphur-colored. *Pappus* sordid.

Magellan, near the lignite-mine (perhaps the same with *H. antarcticum*).

5. HIERACIUM PATAGONICUM Hook. f.

Rough, with spreading hairs. Stolons none. *Radical leaves* oblong-lanceolate, subacute, narrowing to a petiole; cauline leaves few, sessile, narrower, obscurely and remotely toothed. *Stem* scapiform, paniculately branching, bearing 6–8 heads. *Involucral* scales linear, subsetose, with rigid, black, spreading hairs.

Patagon., Golfo de San Jorge; by Cape Fairweather; Fuegia.

6. H. PHILIPPII Alboff.

Stems numerous, 20 cm. high, *pubescence* mixed, long, simple hairs and glandular; with 3–5 setaceous bracts, branching above, having 2–4 heads on slender peduncles. *Leaves* radical, obovate-lanceolate, attenuate-petiolate, apiculate at the apex and margins, with sessile glands on both surfaces; 1 or 2 of the leaves narrow-linear. *Heads* small. *Pappus* sordid. (Near *H. magellanicum.*)

Fuegia, Navarin I.; Falklands.

7. H. PILOSELLA Linn.

Pilose-pubescent and stoloniferous. *Scape* slender, erect, with 1 large, yellow head, 3 cm. in diameter. *Leaves* oblong to spatulate, entire, obtuse or acutish, attenuate-petiolate, 5 cm. by 12 mm. *Involucre* pubescent. *Achenes* oblong.

(Europe; naturalized in N. Amer.); S. Patagon., by Hatcher in Cordilleras, on damp ground; Feb. 15, 1897.

8. H. TRISTE Willd.

About 15 cm. high. *Stem* simple, few-leaved, racemose, with 1–4, yellow heads. *No stellate hairs* and no glands. Radical *leaves* obovate to spatulate, entire, green; glabrate or nearly so; upper leaves oblong to linear, with the stems villous. *Heads* 1 cm. high and broad. *Involucre* and peduncle with blackish wool. *Achenes* short, columnar. *Pappus* fuscous.

(Bering's Strait and Aleutian Is.); S. Patagon., by Hatcher in the Cordilleras.

PART VI.

ANALYSIS OF THE ORDERS AND FAMILIES OF THE FLOWERING PLANTS OF PATAGONIA.

The Flowering Plants differ from the Pteridophytes by an advanced development of the microsporangia into stamens bearing pollen, and of the megasporangia into ovules which become embryo-bearing seeds. They contain two chief classes, the antique one called the *Gymnospermia*, having pteridophytic affinities; and the modern class, known as the *Angiospermia*, because of their seed being in true seed-vessels, with stigmas.

The superclass of Angiosperms is itself composed of two classes — the *Monoctyledones*, and the *Dicotyledones*, the latter being the larger. And each of these classes contains a considerable number of Plant families; of which according to Engler and Prantl, there are 280, namely 4 families in the *Gymnosperms*, 43 families in the *Monocotyledones,* and 233 families in the *Dicotyledones.* When a family is named from one of its leading genera, which is usually the case, its name has *-aceæ* for termination; as from *Lilium*, the family *Liliaceæ.* Alliances of natural families are known by the terminal *-ales* as *Liliales.* These are becoming known as *Orders.*

It is found convenient to break up the large Class of Dicotyledones into a few subclasses, each of them containing many orders and families. The character of the perianth, whether absent or, if present, whether its petals are distinct from each other or coalesce, and whether the perianth is superior, or inferior, or perigynous, relatively to the inner organs of the flower, are of chief importance here. But we may expect exceptional cases, which render the classification necessarily artificial. It must also be remembered that a natural system is not serial; that even if we knew all the interrelations of the families it should be necessary to arrange them not in line but in space, like the ramifications of a tree. In the system here adopted we begin a large group with the simplest forms among its components, and end with the most complex. There are some irreducible cases of families whose natural affinities are unknown, as Euphorbiaceæ, and Polygalaceæ.

The Patagonian region contains representatives of about 113 natural families, of which the Dicotyledones have 92, and the Monocotyledones about 17 families, whilst there are 4 families of Gymnosperms.

THE ORDERS AND FAMILIES.

Subkingdom SPERMATOPHYTA = Phanerogamia, or Flowering-plants (*Embryophyta siphonogama* Engler), having pollen and producing seeds with embryo.

A. Superclass *GYMNOSPERMIA* (families 1–4), pp. 140–145. Trees or shrubs with diclinous flowers, the carpels not forming a closed ovary nor bearing a stigma.

b. Branching freely; the wood consisting of tracheids, without ducts (saving resiniferous ducts), forming annual rings and bark. Flowers mostly in staminate and pistillate cones, without perianth. (CONIFERÆ, p. 140.)

c. Leaves in spirals. Cones many-carpellary, dry. Seed 1 in each carpel, inverted. Family 1. *Araucaria* of *Pinaceæ*, p. 140.

c2. Leaves in whorls of 2–4. Cones woody or fleshy, few- (1–4)- carpeled. Seeds often several in each carpel, erect. Stamens with 3–5 pollen sacs, the pollen wingless. Family 2. *Cupressaceæ*, p. 141.

c3. Leaves acicular or broader, rarely opposite. Cones often fleshy, few-carpeled, carpels 1-seeded. Stamens with 2 pollen sacs, the pollen winged. Family 3. *Podocarpeæ* of *Taxaceæ*, p. 142.

b2. Branching or with simple stem; jointed and with ducts in the wood. Leaves reduced to scales. Flowers with a small perianth. Seeds fleshy, grape-like. (GNETALES.) Family 4. *Ephedraceæ*, p. 144.

AA. Superclass *ANGIOSPERMIA.* Trees, shrubs or herbs, having fibrovascular bundles; the flowers varying as to sexuality and perianth; the carpels forming a normally closed, stigmatiferous ovary.[1] Families 5–113, p. 146–906.

B. Class MONOCOTYLEDONES or Endogens. Having stem endogenous; leaves usually parallel-veined, non-stipulate; flowers normally 3-merous; embryo with 1 cotyledon. Families 5–21, pp. 146–324.

C. (*Acyclicæ.*) Flowers with the parts spirally arranged, showing little structural symmetry.

d. Perianth none, or consisting of bristles or scales.

e. (*Pandanales.*) Perianth of hypogynous bristles. Stamens 1–∞; carpels 1–∞, not united, usually stipitate. Seeds endospermous. Tall marsh-plants, with linear leaves, and monœcious flowers in terminal, acrandrous spikes. Family 5. *Typhaceæ*, Cat-tail, p. 146.

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[1] *Terms explained: Acrandrous*, having staminate flowers uppermost; *acrogynous*, having pistillate flowers uppermost; *eudiplostemonous*, having the outer stamens antisepalous; *obdiplostemonous*, having the outer stamens antipetalous. *Tepaliferous* families are such as have double perianth of *tepals*, not differentiated into petals and sepals, but all similar. The tepals may be colored or green or dry scales like chaff. *Sepalo-petalous* flowers have a double perianth consisting of differentiated sepals and petals.

*e*2. (*Arales.*) Perianth none, or scales. Flowers monœcious on a spadix, mostly enclosed by a spathe.

f. Land-plants with sympodial stems, or basal leaves; these mostly large and reticulate. Fruit a berry. Family 12. *Araceæ*, p. 289.

*f*2. Minute, stemless, floating plants, in fresh water. Stamen 1. Family 13. *Lemnaceæ*, Duckweed, p. 290.

*e*3. (*Helobiales* p. p.). Aquatic or marsh plants, with sepaloid or reduced perianth, and seeds with no endosperm.

f. Perianth of 4 leaflets, or none, or a cup. Plants submerged or floating. Family 6. *Potamogetonaceæ*, Pondweed, p. 147.

*f*2. Perianth 2-seriate, hypogynous. Carpels partially united. Flowers in an erect raceme or spike. Leaves radical, rush-like. Family 7. *Juncaginaceæ*, p. 150.

*d*2. Perianth 2-seriate, the inner petaloid. (*Helobiales* p. p.) Aquatic plants. Seeds with no endosperm.

e. Perianth 3 + 3; petals white, showy. Flowers panicled or racemed, hypogynous, the carpels not united. Leaves long-petioled. Family 8. *Alismaceæ*, Water-plantain, p. 152.

*e*2. Flowers diœcious and syncarpous; the females solitary on long, coiling scapes. Leaves long, grass-like, floating in quiet waters. Family 9. *Vallisneriaceæ*, Tape-grass, p. 153.

*d*4. (*Glumales.*) Flowers mostly without perianth, but with dry glumes, hypogynous, monocarpellary, 1-seeded. Seeds with large endosperm.

e. Usually hermaphrodite. Stems terete, normally hollow and jointed. Leaves narrow, 2-ranked, with split sheaths. Flowers in spikelets, the pericarp adhering to the seed. Embryo at base of, and external to the endosperm. Family 10. *Gramineæ*, Grasses, p. 154.

*e*2. Mostly monœcious. Stem normally trigonal, solid, with narrow, 3-ranked leaves, having closed sheaths. Pericarp not adhering to the seed. Embryo enclosed in the endosperm. Family 11. *Cyperaceæ*, Sedges, p. 256.

CC. (*Eucyclicæ.*) Families with normally 5-cyclic flowers; the whorls generally isomerous, mostly trimerous, rarely pluri- or di-merous. Sometimes with tepals instead of differentiated sepals and petals. Rarely tetra-cyclic, there being only one staminal whorl.

d. (*Farinales.*) Flowers 3–2-merous, with formula t3–t3, st3–st3, syncarpels 3. The stamens may be 1-seriate, or only 1. Seeds orthotropous or curved. Endosperm mealy.

e. Mostly diœcious, with glume-like perianth. Herbage and spikelets of *Cyperaceæ*, but leaf-sheaths split. Family 14. *Restionaceæ*, p. 292.

*e*2. Hermaphrodite; with spikelets having 1–3 glumes. Stamens 1–2, with 1 anther. Ovary 1–3-celled; cells 1-seeded. Family 15. *Centrolepidaceæ*, p. 292.

e3. Hermaphrodite. Perianth sepalo-petalous, and epigynous. Stamens 6. Ovary 3-celled; style 3-lobed; seeds numerous. Epiphytes with scurfy leaves. *Tillandsia* of Family 16. *Bromeliaceæ*, p. 293.

d2. (*Liliales.*) As *Farinales*, but with mostly anatropous seeds, and fleshy, or cartilaginous, or oily endosperm. Chiefly herbs, with 3-merous flowers, and 2-seriate tepalous perianth.

e. Hypogynous, at least usually.

f. Perianth-leaves glume-like. Stamens 6 or 3. Family 17. *Juncaceæ*, Rushes, p. 295.

f2. Perianth-leaves usually large and petaloid. Stamens 6. Family 18. *Liliaceæ*, Lily, p. 303.

e2. Epigynous. Perianth usually petaloid.

f. Style simple, or rarely 3-lobed. Stamens 6, on base of perianth. Family 19. *Amaryllidaceæ*, p. 309.

f2. Style 3-cleft, its branches often flattened and petaloid. Stamens 3, on base of outer tepals. Family 20. *Iridaceæ*, p. 312.

d3. (*Orchidales.*) Typically 3-merous and 4-cyclic; stamens 1, rarely 2, connate with the stigma. Perianth 2-seriate, both series petaloid, but differentiated; the inner being very zygomorphic, and its posterior becoming its anterior from the torsion of the long inferior 1-(rarely 3-) celled ovary. Seeds very many and very minute, without endosperm. Family 21. *Orchidaceæ*, Orchid, p. 320.

BB. Class DICOTYLEDONES or Exogens. Having stem exogenous; leaves reticulately veined, stipulate or estipulate; flowers normally 5–4-merous, rarely 3–2-merous; embryo with 2 cotyledons. Families 22–113, pp. 325–906.

C. Subclass APETALÆ. Including families with naked or with monochlamydeous flowers; a few are petaliferous, but with simple perianth. Families 22–31, pp. 325–354.

d. (*Salicales.*) Flowers naked, diœcious, with cup-like or tooth-like disk. Stamens 2–∞. Carpels 2, united. Ovary 1-celled, with 2 parietal placentæ, and many anatropous seeds, these having hairy plumes and no endosperm. Woody plants, with simple, alternate, mostly stipulate leaves. Family 22. *Salicaceæ*, Willow, p. 325.

d2. Flowers cyclic, rarely naked. Stamens mostly opposite the perianth-leaves.

e. (*Fagales.*) Trees with alternate, stipulate leaves, and spicate, usually monœcious flowers. Male catkins globose. Carpels 2–6, connate; seeds few, with no endosperm. Fruit burr-like. Family 23. *Fagaceæ*, Beech, p. 325.

e2. (*Urticales.*) Herbs or woody, with alternate or opposite, stipulate leaves, and flowers small, clustered, 4- (2–5-) merous, often monœcious. No catkins. Filaments reflexed. Carpels 2–1, becoming a 1-seeded nut. Seeds mostly with oily endosperm. Family 24. *Urticaceæ*, Nettle, p. 330.

d3. Perianth cyclic, bract-like or petaloid, rarely differentiated into calyx and corolla. Flowers hermaphrodite or diclinous.

e. (*Proteales.*) Flowers usually 2–4-merous, the stamens hypogynously opposite and adnate to the petaloid segments, only the anthers free. Carpel 1; seed mostly 1. Chiefly woody plants, with alternate, estipulate leaves. Family 25. *Proteaceæ*, p. 333.

*e*2. (*Santalales.*) Perianth green or petaloid. Stamens as many as the perianth-segments, or twice as many. Ovary 1-celled, superior or inferior; seeds few, often imbedded in the placenta; with large endosperm. Plants usually more or less parasitical.

f. Leaves green, estipulate. Seed solitary.

g. Leaves mostly opposite. Flowers monœcious or diœcious. Ovary 1-celled, 1-ovuled, immersed; fruit a berry. Parasitic shrubs.
Family 26. *Loranthaceæ*, Mistletoe, p. 335.

*g*2. Leaves alternate or opposite. Flowers hermaphrodite. Calyx 4–5-cleft, its tube adnate to the 1-celled ovary. Ovules 2–5. Style cylindric. Semi-parasitic.
Family 28. *Santalaceæ*, Sandalwood, p. 338.

*f*2. Leafy or leafless. Flowers diœcious; the males naked, 2–3-staminate; the females with 3-parted calyx, adnate to the 3-seeded ovary. Fruit 1-seeded, trigonal, with 3 feathery plumes on the angles. Tree-parasites.
Family 27. *Myzodendraceæ*, Angel's beard, p. 336.

*f*3. Leafless, fungus-like parasites, only the top of the large solitary flower visible above ground. Stamens 3 (–5), with 3 staminodes. Ovary inferior; fruit baccate. Family 30. *Hydnoraceæ*, p. 344.

*d*4. Perianth double, the calyx minute, or none. Trees or shrubs with alternate, estipulate leaves, and perfect flowers. Stamens 1–3-seriate. Ovary 4-celled; the cells 1-seeded. Fruit a drupe. Family 29. *Olacaceæ*, p. 344.

*d*5. (*Polygonales.*) Flowers cyclic or subspiral, radiate, with a 3-merous tendency. Ovary 1-celled, with 1, mostly orthotropous, ovule. Flowers usually small, in compound inflorescences. Leaves mostly with an ochrea.
Family 31. *Polygonaceæ*, Buckwheat, p. 345.

CC. Subclass CHORIPETALÆ or Mesochlamydeæ. Flowers mostly hermaphrodite, the perianth usually sepalo-petalous (*i. e.*, differentiated into calyx and corolla); the leaves of the corolla being distinct petals and usually colored. In a few genera the petals are wanting, and then the sepals are petaloid.
(Families 32–82), p. 354–643.

d. Alliances with single bracteoid or petaloid perianth; yet often sepalo-petalous.

e. (*Centrospermales.*) Flowers spiral or cyclic, small and crowded, tepalous or sepalo-petalous, hypogynous. Stamens often isomerous with, and opposite to the perianth-leaves, yet varying from many to 1. Carpels 1 to many, mostly syncarpous. Ovary rarely pluri-celled, mostly 1-celled, with 1–∞-curved seeds. Embryo mostly curved around endosperm. Chiefly herbs.

f. Tepalous, bract-like, perianth.

g. Flowers greenish; bracts, if any, not scarious. Styles 1–2. Utricle rarely circumscissile, mostly indehiscent.
Family 32. *Chenopodiaceæ*, Goosefoot, p. 354.

*g*2. Flowers green or white, with scarious bracts and 2 bractlets. Utricles mostly circumscissile. Family 33. *Amarantaceæ*, Amaranth, p. 372.

*f*2. Petalous, symphyllous perianth, usually with a calyx-like involucre. Style 1; fruit an anthocarp.
Family 34. *Nyctaginaceæ*, Marvel of Peru, p. 376.

*f*3. Tepalous or sepalo-petalous, perigynous. Outer perianth 3–5-merous; inner often of numerous, small petals or none. Prostrate herbs, with opposite or whorled leaves, and scarious stipules.
Family 35. *Aizoaceæ*, Carpet-weed, p. 377.

*f*4. Sepalo-petalous. Sepals mostly 2. Petals and stamens 4–5. Placenta basal. Fleshy herbs; leaves often opposite, sometimes stipulate.
Family 36. *Portulacaceæ*, Purslane, p. 378.

*f*5. Sepalo-petalous, or rarely apetalous. Flowers 5–4-merous, mostly diplostemonous; sometimes 2–5-staminate. Ovary mostly 1-celled, with 2–5 styles and central placenta. Herbs, with opposite, entire, normally estipulate leaves. Some small forms have scarious stipules, apetalous flowers, and achenial fruit. Family 37. *Caryophyllaceæ*, Pink, p. 382.

*d*2. Alliances with mostly sepalo-petalous perianth.

e. Apocarpy and hypogyny prevail. Seeds with endosperm.

f. (*Ranales.*) Flowers spiral to cyclic, tepalous to sepalo-petalous, epigynous to hypogynous, radiate to zygomorphic, mostly with many stamens. Carpels ∞–1, mostly free, rarely united. Herbs, or woody.

g. Perianth single, many-parted. Flowers monœcious. Stamens numerous. Carpel 1, with one suspended ovule. Erect aquatic, with whorled, dissected leaves.
Family 38. *Ceratophyllaceæ*, Hornwort, p. 398.

*g*2. Spiral to cyclic; perianth single or sepalo-petalous. Carpels usually separate. No stipules.

h. Leaves often much divided; and mostly alternate. Flowers radiate or zygomorphic, or apetalous. Mostly herbs.
Family 39. *Ranunculaceæ*, Crowfoot, p. 398.

*h*2. Carpels numerous, 1-seeded, in an accrescent, fleshy cup. Aromatic trees or shrubs, with opposite leaves.
Family 42. *Monimiaceæ*, p. 420.

*g*3. Spirocyclic, 3-merous flowers, many-seriate perianth, and many stamens and achenes on a long, floral axis. Trees with simple, alternate leaves, and fugacious, thin stipules.
Family 41. *Magnoliaceæ*, p. 419.

*g*4. Cyclic, mostly. Flowers often 3-merous, sepals and petals each 2-seriate. Stamens often equal and opposite the petals, and anthers often with uplifted valves. Carpel 1, with parietal placenta. Fruit baccate. Shrubs, with simple or pinnate, often spinose leaves.
Family 40. *Berberidaceæ*, Barberry, p. 415.

*e*2. Syncarpy and hypogyny prevail.

f. (*Rhœadales.*) Flowers cyclic (not always the stamens), sepalo-petalous, rarely apetalous, hypogynous, radiate or zygomorphic. Carpels ∞–2, united. Mostly herbs, flowers often racemed.

g. Flowers 2-merous (zygomorphic in the Subfamily, which has 6 diadelphous stamens, and a globular nutlet). Sepals 2, fugacious. Petals 4. Seeds with endosperm. Herbs with colored juice.
Fumitory subfamily of Family 43. *Papaveraceæ*, Poppy, p. 421.

g2. Endosperm none. Leaves mostly alternate, and estipulate.

h. Sepals and petals 4. Stamens 6, tetradynamous, or fewer by abortion. Carpels 2, united, with a false septum. Radicle folded on cotyledons. Family 44. *Cruciferæ*, Mustard, p. 421.

h2. Flowers 5-merous, radiate. Stamens 6 to many, not tetradynamous. Ovary mostly 1-celled.
Family 45. *Capparidaceæ*, Caper, p. 454.

h3. Flowers spirocyclic, unsymmetrically 4–7-merous, small, in racemes or spikes. Capsule 3–6-lobed, 1-celled, opening prematurely at apex, with parietal placentæ. Small herbs, with glands for stipules. Family 46. *Resedaceæ*, Mignonette, p. 454.

f2. (*Sarraceniales.*) Flowers spirocyclic to cyclic, sepalo-petalous, hypogynous, radiate, 5-(–4-) merous. Stamens 5 (4–20); ovary 1–3-celled. Marsh-herbs with basal leaves having viscid hairs, insectivorous.
Family 47. *Droseraceæ*, Sundew, p. 455.

e3. Perigyny common; but apocarpy and hypogyny still occur. Immersion of the gynecium in the floral axis often induces syncarpy and epigyny of perianth and stamens. (*Rosales.*) Flowers cyclic, rarely spirocyclic, sepalo-petalous or rarely apetalous, hypogynous to epigynous, radiate or zygomorphic. Carpels often free, or sometimes united, occasionally with thick placentæ, and many-seeded.

f. Seeds usually with endosperm.

g. Flowers completely isomerous (or occasionally diplostemonous). Sepals partly united. Seeds small, with scanty endosperm. Fleshy herbs, with simple, alternate, estipulate leaves.
Family 48. *Crassulaceæ*, Stonecrop, p. 456.

g2. Diplostemonous. Leaves opposite or whorled, stipulate. Petals smaller than sepals or none. Shrubs or trees, with small flowers in heads or racemes. Family 50. *Cunoniaceæ*, p. 466.

g3. Normally diplostemonous. Leaves mostly alternate, estipulate. Petals normal, mostly half-epigynous. Carpels few, often 2, united, with diverging beaks. Herbs or shrubs. Seeds endospermous.
Family 49. *Saxifragaceæ*, p. 457.

f2. Seeds mostly without endosperm. Leaves alternate, stipulate. Flowers 5-merous.

g. Carpels ∞–1, buried in the receptacle, or mounted on a disk, or in a pome. Flowers regular; stamens numerous, often perigynous.
Family 51. *Rosaceæ*, Rose, p. 467.

g2. Carpel usually a single legume. Flowers mostly papilionaceous, with 10 stamens, or subpapilionaceous, or regular with many stamens. Odd sepal anterior. Family 52. *Leguminosæ*, Pea, p. 485.

e4. Flowers usually with 5–4 cycles. Apocarpy and isomerism occur; but syncarpy and oligomery of gynecium prevail; pliomery of this is rare. Stamens often 10 or fewer.

f. (*Geraniales.*) Flowers cyclic, sepalo-petalous or apetalous, rarely entirely naked, normally 5-merous. Carpels 5–2, rarely more, united, but often separating at maturity, each with 2–1 seeds. Seed epitropous, with ventral raphe, and superior micropyle; a second, if present, has dorsal raphe and inferior micropyle.

g. Sepalo-petalous, often obdiplostemonous, rarely isostemonous. Anthers with lateral slits. Carpels isomerous or oligomerous.

h. Capsule ultimately separating into 5 carpels on the elongated axis. Stamens 10. Styles branching. Leaves lobed or divided. Family 53. *Geraniaceæ*, Geranium, p. 531.

*h*2. Capsule 2–5-celled, not separating. Diplo- or triplo-stemonous. Styles distinct or branching. Leaves mostly radical, palmately 3-parted, or many-parted. Family 54. *Oxalidaceæ*, p. 536.

*h*3. Capsule 3-celled, ultimately splitting apart. Perianth showy, zygomorphic, with a spur. Stamens 8; style 1. Leaves peltate or palmatifid. Family 55. *Tropæolaceæ*, p. 543.

*h*4. Capsule 4–12-celled. Flowers regular, 5- rarely 4-merous, diplo- or triplo-stemonous. Mostly shrubs, with opposite, pinnate, stipulate leaves. Family 56. *Zygophyllaceæ*, p. 544.

*e*5. Anomalous families. Seeds mostly with endosperm. (The following three families are of unknown affinities.)

*f*2. Flowers zygomorphic, with 2 staminal whorls; anthers opening by pores. Carpels 2, united. Petals 3(–5), united into a tube, dorsally open and often crested. Sepals 5, the lateral pair becoming large wings. Endosperm present or wanting. Family 57. *Polygalaceæ*, Milkwort, p. 546.

*f*2. Flowers regular, mostly apetalous, monœcious or diœcious. Ovary mostly tricoccous; the ripe cocci often elastically springing from the axis. Embryo large, in fleshy or oily endosperm. Herbs or shrubs with milky juice, sometimes spinose. Family 58. *Euphorbiaceæ*, p. 551.

*f*3. Small, aquatic herbs, with opposite, entire leaves, and minute, solitary flowers, sessile in the axils. Stamen 1; ovary 4-celled, with 2 styles. Family 59. *Callitrichaceæ*, Water Starwort, p. 556.

*e*6. (*Sapindales*, including *Celastrales*.) Like *Geraniales*, but having the seeds turned round, so as to be either pendent with dorsal raphe and superior micropyle, or ascending, with ventral raphe and inferior micropyle. Chiefly woody plants.

f. Flowers sepalo-petalous, radiate, monœcious or diœcious. Petals 3; stamens 3. Gynecium iso- or plio-merous. Drupes black or red, with 6–9 nutlets. Heath-like evergreens. Family 60. *Empetraceæ*, Crowberry, p. 557.

*f*2. Stamens 10; ovary 5- or 10-lobed, 5-styled, becoming 1-seeded cocci. Shrubs with opposite or 3-whorled, estipulate leaves. Family 61. *Coriaraceæ*, p. 557.

*f*3. Sepalo-petalous or apetalous, radiate, small flowers. Gynecium tending to oligomery. Stamens on a disk.

g. Leaves with resin-ducts. Flowers 3–7-merous, polygamous to hermaphrodite. Fruit a small drupe; cells 1-seeded. Endosperm scanty or none. Family 62. *Anacardiaceæ*, Sumach, p. 558.

*g*2. No resin-ducts. Flowers 4–5-merous, mostly hermaphrodite. Ovary 3–5-celled; style 3–5-lobed. Seeds with aril and endosperm. Leaves pinnately veined. Family 63. *Celastraceæ*, Staff-tree, p. 559.

*g*3. (*Rhamnales.*) Cyclic, sepalo-petalous or sometimes apetalous, perigynous. Stamens as many as and opposite to the petals. Carpels 5–2, united, and more or less inferior; cells mostly 1-ovulate. Seeds with endosperm, having dorsal, lateral or ventral raphe. Shrubs, with simple, stipulate leaves, often thorny.
Family 64. *Rhamnaceæ*, Buckthorn, p. 561.

*g*4. (*Malvales.*) Flowers cyclic (not always the stamens), sepalo-petalous, rarely apetalous, radiate, rarely zygomorphic. Calyx 5-merous, valvate. Petals 5. Stamens usually numerous. Carpels 2–∞ united, each with 1–∞ anatropous ovules. Leaves stipulate.

h. Anthers 2-celled, opening by pores. Petals often many-lobed or wanting. Drupe with pyrenes. Trees or shrubs with entire, non-resinous leaves. Family 65. *Elæocarpaceæ*, p. 567.

*h*2. Anthers 1-celled; pollen prickly. Stamens monadelphous. Leaves alternate, often with stellate hairs. Calyx often with a calyculus.
Family 66. *Malvaceæ*, Mallow, p. 568.

*e*5. (*Parietales.*) Spirocyclic or cyclic, often with ∞ stamens and ∞ carpels; sepalo-petalous, rarely apetalous; hypogynous to epigynous. Sepals free or slightly united. Carpels united; placentæ often parietal, occasionally central or basal.

f. Gynecium free on a convex axis.

g. Carpels 5–18, united, but the styles distinct. Flowers 4-merous, the sepals apically connate. Stamens numerous. Evergreen tree, with opposite leaves and connate stipules. Seeds winged. Endosperm.
Family 67. *Eucryphiaceæ*, p. 577.

*g*2. Carpels mostly 3, united, the styles distinct. Stamens in 3 clusters. Leaves opposite or whorled, with pellucid dots, estipulate. Seeds without endosperm.
Family 68. *Hypericaceæ*, St. John's wort, p. 578.

*g*3. Flowers 4–7-merous; petals mostly appendaged at the claws; stamens in two series of 3; anthers versatile. Placentæ parietal; seeds with endosperm. Herbs or undershrubs with decussate leaves.
Family 69. *Frankeniaceæ*, p. 578.

*g*4. Carpels 3, united, 1-celled, 1-styled, with parietal placentæ. Perianth zygomorphic, 5-merous, 1 petal usually spurred. Anthers 5, connate, 2 of them spurred. Leaves simple, alternate, stipulate. Scapes 2-bracted, 1-flowered. Herbs.
Family 70. *Violaceæ*, Violet, p. 580.

*g*5. Petals without ligulæ (no petals in the Patagonian species). Stamens ∞, on a disk. Placentæ 3–5, parietal; styles as many. Evergreen shrubs with 2-ranked leaves. Family 71. *Flacourtiaceæ*, p. 584.

*f*2. Gynecium mostly elevated on a gynophore, with a crown of radials at its base. Stamens few, inserted with the perianth perigynously. Ovary

1-celled with parietal placentæ. Styles 3–5, clavate. Fruit a berry. Leaves often lobed, with axillary tendrils.
Family 72. *Passifloraceæ*, Passion-flower, p. 584.

*f*3. Gynecium immersed in the axis, and united with it, 1-celled. Flowers mostly yellow. Stamens many. Placentæ parietal or superior. Leaves often compound. Family 73. *Loasaceæ*, p. 585.

*e*6. (*Opuntiales.*) Flowers hemicyclic, sepalo-petalous, with spirally arranged sepals, petals, and stamens, on the tubular axis, and 4–∞ carpels forming an inferior gynecium. Succulent plants, usually leafless and spiniferous.
Family 74. *Cactaceæ*, Cactus, p. 591.

*e*7. Flowers cyclic; the gynecium commonly sunk in the hollow floral axis, and often connate with the floral axis or the receptacle. Stipules usually none.

f. (*Myrtales.*) Flowers sepalo-petalous or apetalous, iso- or diplo-stemonous (sometimes more by fission); rarely zygomorphic; axis hollow, with 2–∞ carpels united in a free or adnate gynecium.

g. Seeds usually numerous, without endosperm.

h. Flowers perigynous; ovary more or less free, 2–6-celled. Stamens 1–3 times the petals. Bicollateral bundles.
Family 76. *Lythraceæ*, Loosestrife, p. 599.

*h*2. Epigynous. Stamens numerous. Style 1. Shrubs or trees, with opposite leaves, having oil-glands.
Family 77. *Myrtaceæ*, Myrtle, p. 601.

*h*3. Flowers epigynous, 4–5-merous. Stamens few, often 2-seriate. Herbs or shrubs with simple, non-glandular leaves, opposite or alternate. Family 78. *Onagraceæ*, Evening-primrose, p. 606.

*g*2. Perigynous; tending to apetaly. Seed mostly 1, pendulous, without endosperm, but with 2 integuments. Stamens about 8, in 2 series. Trees or shrubs, with rough, inner bark.
Family 75. *Thymeleaceæ*, Mezereon, p. 597.

*g*3. Seeds with endosperm, solitary in the carpel, and with only 1 integument. Flowers epigynous, sometimes diclinous. Stamens 4–8, or 1–2. Amphibious plants with alternate or whorled leaves, and small, greenish flowers. Family 79. *Haloragidaceæ*, Water-milfoil, p. 615.

*f*2. (*Umbellales.*) Flowers cyclic, sepalo-petalous, mostly isostemonous, epigynous, 5–4-merous, mostly hermaphrodite, radiate. Flowers mostly in umbels. Carpels 1-seeded. Embryo small, in large endosperm. Herbaceous or woody.

g. Flowers 5-merous. Styles as many as the carpels.

h. Gynecium 1- to several-celled. Stamens 5 or 10. Fruit a berry or drupe. Woody, with palmately divided leaves, and umbels or racemes. Family 80. *Araliaceæ*, Ivy, p. 619.

*h*2. Gynecium 2-merous, the ripe mericarps coming away from the axis. Sepals reduced to teeth or obsolete. Simple or compound umbels. Leaves usually much divided, estipulate, but with a sheathing base. Family 81. *Umbelliferæ*, Carrot, p. 619.

*g*2. Flowers 5-merous. Gynecium 2–3-celled; style 1. Stamens mostly

5. Fruit a drupe. Mostly woody plants; flowers small, racemed, diœcious in this species. Family 82. *Cornaceæ*, Dogwood, p. 643.

CCC. Subclass Sympetalæ, or Metachlamydeæ. Perianth highly specialized, normally double, with the inner perianth sympetalous; a few forms however differing from their allied species by being choripetalous or apetalous. Families 83–113, pp. 644–906.

d. Pentacyclic-isocarpic sympetals. Besides sympetaly, occasional choripetaly obtains. Staminal cycles 2 or 1. Hypogyny is dominant, epigyny rare. Woody plants and herbs, mostly with simple estipulate leaves, and seeds with endosperm. Flowers usually hermaphrodite.

e. (*Ericales.*) Flowers 5–4-merous, obdiplostemonous, or isostemonous through suppression of the outer series of stamens. Petals free, or mostly united to each other. Stamens mostly hypogynous, occasionally epigynous, often inserted on the base of the corolla-tube. Carpels 2–5, when isomerous usually oppositipetalous. Fruit a capsule or berry, or drupe.

f. Anthers 2-celled, often with paired appendages, and often opening by terminal pores. Pollen in quartets. Stamens mostly 8–10. Family 83. *Ericaceæ*, Heath, p. 644.

*f*2. Anthers usually 1-celled, and opening by slits. Pollen simple. Stamens mostly 5–4. Family 84. *Epacridaceæ*, p. 649.

*e*2. (*Primulales.*) Flowers 5- (4–8) merous, typically eudiplostemonous, but usually isostemonous, and the stamens oppositipetalous, with or without rudiments of an outer series. Rarely unisexual and rarely zygomorphic, also rarely choripetalous. Ovary mostly superior, 1-celled, with a basal or free-central placenta.

f. Seeds usually numerous. Style 1. Family 85. *Primulaceæ*, Primrose, p. 650.

*f*2. Seed 1, on a long basal funicle. Styles 5. Flowers usually small, crowded and bracted. Family 86. *Plumbaginaceæ*, Leadwort, p. 654.

*e*3. (*Ebenales.*) Diplostemonous or triplostemonous, or with few stamens. Sympetalous and hypogynous. Ovary several-celled, cells with 1–few seeds on an axile placenta. Woody plants with alternate, entire leaves, and milky juice. Family 87. *Sapotaceæ*, p. 656.

*d*2. Tetracyclic, anisocarpic sympetals. Stamens epipetalous.

e. (*Gentianales.*) Flowers regular and hypogynous, usually hermaphrodite; the carpels 2, often only slightly connate. Choripetaly and apetaly occur in exceptional cases. Mostly with opposite, entire, estipulate leaves and endospermous seeds.

f. Stamens only 2, or few. Flowers mostly 4-merous, sometimes apetalous. Trees or shrubs. Family 88. *Oleaceæ*, Olive, p. 657.

*f*2. Stamens isomerous with the perianth members.

g. No milk-ducts.

h. Ovary 2–4-celled; stigma lobed (antero-posteriorly). Flowers 4–5-merous; seeds 1-several. Trees or shrubs, with stipules or transverse stipular ridges. Family 89. *Loganiaceæ*, Strychnia, p. 658.

h2. Ovary 1-celled, with 2 parietal placentæ (right and left). Herbs, with leaves opposite or whorled and exstipulate.
Family 90. *Gentianaceæ*, Gentian, p. 660.

g2. With milk-ducts. Herbs or shrubs.

h. Styles united; stigma ring-formed. Stamens distinct; pollen granular. (Endosperm sometimes none).
Family 91. *Apocynaceæ*, Dogbane, p. 663.

h2. Styles united only by the broad apical stigma. Stamens partly united, with pouches and horns, and with carriers of the pollen-masses. Family 92. *Asclepiadaceæ*, Milkweed, p. 663.

e2. Flowers regular or zygomorphic, hermaphrodite. Carpels (mostly 2–3) completely united.

f. Perianth hypogynous.

g. *Tubiflorales*. Flowers typically of 4 isomerous whorls, or with oligomery of the gynecium, and also (in case of zygomorphy) of the stamens. Corolla usually membranous and colored. Chiefly herbs.

h. Flowers mostly radiate. Carpels with few, to 2, seeds. Leaves mostly alternate.

i. Seeds with inferior micropyle and endosperm. Fruit rarely falling apart into 4 valves. Corolla plaited; its divisions contorted.

j. Ovary 2–4 celled; style 1, entire or divided; seeds about 2 in each cell. Corolla usually funnelform, and plant usually climbing. Family 93. *Convolvulaceæ*, p. 665.

j2. Ovary 3-celled; style 3-cleft; each cell with 2 or more seeds. Corolla mostly salver-shaped.
Family 94. *Polemoniaceæ*, Phlox, p. 667.

i2. Seeds with superior micropyle. Inflorescence scorpioid.

j. Fruit a capsule. Ovary 1-celled, with 2 placentæ, or spuriously 2-celled. Style 2-lobed or parted. Seeds 2 or more on each placenta, with endosperm. Herb not twining, with protruding stamens.
Family 95. *Hydrophyllaceæ*, Waterleaf, p. 673.

j2. Ovary deeply 4-lobed around the style, becoming drupelets or nucules. Mostly no endosperm.
Family 96. *Borraginaceæ*, p. 676.

h2. Flowers mostly zygomorphic. Carpels having 2, rarely only 1 seed, with little or no endosperm. Leaves mostly opposite or verticillate.

i. Seeds with inferior micropyle, becoming drupaceous pyrenes or drupes. Ovary 2-celled. Style terminal, mostly simple.
Family 97. *Verbenaceæ*, p. 680.

i2. Ovary 4-lobed around the style; the lobes becoming 1-seeded nutlets; stigma bifid. Stem usually square, and leaves aromatic. Family 98. *Labiatæ*, Mint, p. 694.

h3. Flowers radiate or zygomorphic. Carpels rarely 5, mostly 2 connate, usually with many, rarely with only 1–2, seeds, occasionally baccate or a stone-fruit, mostly capsules opening not quite to their base.

- *i.* Fruit when capsular dehiscing into 2, rarely 5 or several valves. Isostemonous. Bundles bicollateral. Seeds with endosperm. Inflorescence often cymose.
  Family 99. *Solanaceæ*, Potato, p. 698.
- *i2.* Capsule 2-celled, with many to few seeds. Bundles collateral. Stamens didynamous, except in some of Family 100.
  - *j.* Ovary 2-celled (antero-posteriorly), with axile placenta. Stamens sometimes 5 or 2. Endosperm. Leaves mostly alternate.
    Family 100. *Scrophulariaceæ*, Snapdragon, p. 713.
  - *j2.* Ovary 2–1-celled. Seeds many, flat, winged, with little or no endosperm. Trees or shrubs, mostly with opposite leaves. Family 101. *Bignoniaceæ*, p. 727.
  - *j3.* Ovary 1-celled, with 2 parietal placentæ (or 2- or 4-celled by ingrowth). Leaves opposite or whorled. Endosperm present or none. Herbs.
    Family 102. *Gesneriaceæ*, p. 728.
- *i3.* Ovary 1-celled, or falsely 2–4-celled. Seeds few, not winged, with little endosperm. Capsule horned. Stamens as in *Scrophulariaceæ*. Gland-bearing herbs; leaves mostly opposite. Family 103. *Martyniaceæ*, Unicorn-plant, p. 730.
- *i4.* Ovary 1-celled, with many seeds; no endosperm. Corolla with a palate. Stamens 2, the anther-cells confluent. Floating, aquatic or bog herbs; the leaves tufted, or floating and utriculiferous, or mere scales.
  Family 104. *Lentibulariaceæ*, Bladder-wort, p. 730.

g2. (*Plantaginales.*) Flowers 4-merous, radiate, hermaphrodite or unisexual. Leaves mostly alternate or basal. Usually herbs, rarely with woody stock. Corolla scarious. Ovary 1–4-celled; capsule often circumscissile. Flowers mostly in heads or spikes; but in southern forms, few or solitary on the scape.
Family 105. *Plantaginaceæ*, p. 731.

f2. Perianth epigynous.

- *g.* Stamens not united. (*Rubiales.*) Flowers 5–4-merous, the stamens or carpels often fewer; radiate or zygomorphic. Ovary divided or 1-celled; the cells with several to 1 pendent seeds. Woody plants or herbs, with opposite, mostly entire leaves.
  - *h.* Stamens isomerous. Leaves stipulate or verticillate. Ovary 2–8-cells, the cells mostly 1-seeded.
    Family 106. *Rubiaceæ*, Madder, p. 738.
  - *h2.* Stamens fewer than the perianth-segments. Ovary with only 1 fertile cell, 1-seeded. Leaves exstipulate.
    - *i.* Calyx at first obscure, afterwards often forming a pappus. Seeds without endosperm. Flowers slightly irregular.
      Family 107. *Valerianaceæ*, p. 744.

*i*2. Calyx developed. Ovary 1-celled; style simple; stigma terminal. Seeds with endosperm. Flowers in an involucrate head. Family 108. *Dipsacaceæ*, Teasel, p. 750.

*g*2. Stamens connivent or united. (*Campanulales.*) Flowers typically 5-merous, isostemonous, usually with gynecial oligomery. Ovary several-celled, with several to 1 seed in each cell, or only 1-seeded. Mostly herbs; sometimes shrubs. Leaves exstipulate.

h. Stamens not united (except in subfam. *Lobelieæ* and some *Goodeniaceæ*).

i. With segmented milk-ducts. Ovary 2–several-celled. Style non-indusiate. Family 109. *Campanulaceæ*, Bellflower, p. 751.

*i*2. No milk ducts. Ovary 1–2-celled, 1- to many-ovuled. Style indusiate. Leaves simple. Family 110. *Goodeniaceæ*, p. 755.

*h*2. Stamens 2, united by their filaments to the style. Ovary 2-celled, seeds numerous, with endosperm. No milk-ducts. Family 111. *Candolleaceæ*, p. 756.

*h*3. Stamens isomerous with the corolla-lobes, more or less united. Flowers in involucrate heads.

i. Filaments united, and base of anthers. Style undivided; stigma capitate. Seed pendulous, with little endosperm. Calyx represented by teeth or lobes. Family 112. *Calyceraceæ*, p. 756.

*i*2. Anthers normally united. Style 2-branched (except in the barren flowers). Seed erect, without endosperm. Calyx represented by a pappus or wanting. Family 113. *Compositæ*, Daisy, p. 764–906.

PART VII.

COLLECTORS AND BIBLIOGRAPHY.

1. COLLECTORS.

Philip Commerson, the botanist of Bougainville's French Exploring Expedition, visited Magellan Strait in 1767–68, and gave to the scientific world its first collection of the plants characteristic of the region. J. Banks and D. Solander were the naturalists on Captain Cook's First Voyage, 1768–71, and J. R. Foster and his son, G. Foster, and A. Sparrman, were on Cook's Second Voyage, 1772–75, which visited the Antarctic regions and the Fuegian islands. Anderson on Cook's Third Voyage, and Menzies, who was Surgeon and Naturalist on Vancouver's Voyage, 1791, collected on the Pacific shores of Patagonia.

After the episode of the Napoleonic wars the spirit of geographical and scientific exploration revived primarily with the French, and afterwards with the British. In 1817 Gaudichaud sailed under Admiral Freycinet in two French corvettes on a scientific expedition to New Holland and the East Indies. In course of their return by Cape Horn with valuable botanical collections one of the ships was wrecked on a hidden rock. Gaudichaud's plants, however, were ultimately saved from the wreck, and were further enlarged by collections made on the Falkland Isles. Admiral d'Urville afterwards visited these islands in another French ship and increased Gaudichaud's discoveries. Dr. Eights, an American, also landed on the South Shetland Isles, where he found *Aira antarctica*, the most southern of flowering plants. In 1826–30 the Exploring Expedition under Captain King made further collections in Magellan Strait. The interest in the natural history of the far south of the American Continent received a new impulse from the explorations and singularly bold speculations of Charles Darwin, who went in his early manhood under Captain Fitzroy as naturalist on board the *Beagle*, 1831–36. His indefatigable industry and his observations during the voyage, and the charming descriptions which he gave of what he had seen, as well as the numerous specimens collected and his interesting speculations, rendered the field of his explorations forever classical, and formed a proper opening for the career which has made his name a household word. When in Southern Patagonia, he led a botanical expedition up the Rio Santa Cruz more than 300 kilometers inwards. His work was primarily on the Zoölogy and the Geology of the countries visited; but he never missed an opportunity of gathering examples of the vegetation. His visits were quickly followed by Jacquinot, Hombron and Gaillant, 1837–38, to Magellan Strait. Then the United States Exploring Expedition, under Captain Wilkes marked the entrance of our Western Republic into the civilizing service of science. The results of this voyage were partly worked out and a couple of botanical volumes published under the care of Asa Gray. The great British expedition to the south speedily followed, in the ships *Erebus* and *Terror*, 1839–43, under Captain Sir James C. Ross, with Joseph Dalton Hooker as botanist. Hooker's splendid volumes on the *Flora Antarctica*, illustrated by colored plates, are the outcome of this expedition, with companion volumes on the Flora of New Zealand and of Tasmania. The first volume of the *Flora Antarctica* is confined to the plants of a few islands in the neighborhood of New Zealand; and the second, much the larger volume, deals with the vegetation of Patagonia and neighboring islands (including the Falklands, South Shetlands, South Georgia) and also of the more distant Tristan d'Acunha and Kerguelen. Of this last Hooker writes: "It may appear paradoxical, at first sight, to associate the plants of Kerguelen's Land with those of Fuegia, separated by 140 degrees of longitude, rather than with those of Lord Auckland's group, which is nearer by about 50 degrees. But the features of the Flora of Kerguelen's Land are similar to, and many of the species identical with, those of the American continent, constraining me to follow the law of botanical affinity in preference to that of geographical position." This statement, published in 1847, was the precursor of several striking discussions as to the origin and probable distribution of species, contrary to the views which at that date were prevalent in the New World; these discussions prepared their author for a ready acceptance of the generalizations of A. R. Wallace and Charles Darwin, which, whether accepted in their totality or not, had the effect of disposing of the preceding speculations in the same field.

In his introduction to Vol. II of *Flora Antarctica* Dr. Hooker says, "The successive labors of Commerson, Banks and Solander, and of Menzies, early called the attention of Botanists to the singular aspect of the Fuegian Flora, apparently incompatible in its luxuriance with the rigor of the climate. The subsequent exertions of Captain King and Mr. Anderson, and of Darwin, during the voyages of Captain Fitzroy, of d'Urville, and the officers of our own late Antarctic Expedition, have nearly exhausted the phanerogamic productions." Dusén's remark on this statement is that "it may have been justified regarding the Western and Southern Vegetation of Fuegia, but not at all in regard to the steppes." As to other parts of the Patagonian Region, a great many new species have been described since Hooker's work appeared; and we confess to our surprise in reaching a total of more than 2,100 species of Phanerogams as already described from the mainland and adjoining islands, south of the 39th parallel.

Since and partly concurrently with the work of Hooker, the Chilian botanists have extended their view to Patagonia, most of which is under Chilian government. Carl Gay's large work on Chili devotes eight volumes to its Botany (1845–53), with many descriptions of the Magellan plants. The Philippi's, father and son, are the great authorities on the Chilian plants since Gay's time; and Carl Reiche is ably carrying on the succession in that part. In 1866–69, Robert O. Cunningham afterwards of Belfast College, Ireland, went as naturalist on board a small English Steamer, the *Nassau*, which was sent to survey the Strait of Magellan; the fruit of his work was a large collection of plants as well as animals, and a book on the Natural History of the Strait of Magellan, which is full of life-sketches of the inhabitants, animal and vegetable, of those parts and of their habits. The Argentine Government having control of North Patagonia, on its eastern slope, sent an Exploring Expedition to Rio Negro, under Captain Roca, the Botany of which was prepared for the Report by Lorentz and Niederlein (1881). W. Lechler and the Frenchmen, Savatier, Hariot, and Hyades, the last in the Scientific Mission to Cape Horn (1882–1883), made large contributions. Collections have been made and a great many new forms described and published by C. Spegazzini from different parts of the Region, including Fuegia. In 1896 N. Alboff visited the parts about Ushuaia, on the Beagle Channel, and Staaten Island, and published his observations on the vegetation. The

Swedish expedition (1895–97) under O. Nordenskójld, though chiefly geological, had Mr. Per Dusén as its botanist, who made independent excursions to Patagonia, Chili and Fuegia, and whose publications on the Bryophytes and Flowering Plants have done much to extend our knowledge of the general character of the flora.

Dusén had been previously employed by the Chilian Government as a member of an exploring party along the River Aysen, and on the Guaitecas Islands, and thereby had an opportunity to study the forest-vegetation, and particularly the rich undergrowth of mosses and ferns which are characteristic of the rainy western coast. His later collections were made first about Puerto Madryn (43° 20′ S. Lat. on the east shore), from the xerophil coast and the drifting sand; next along the Rio Chubut, near its mouth; and by the mouths of Rio Sta. Cruz and Rio Gallegos; and about Punta Arenas and Porvenir across the Strait from Punta Arenas, and at Paramo, Rio Grande and neighbouring parts of Fuegia; next at Admiralty Sound, and at Rio Azopardo, and in West Magellan, in Desolation Island, particularly near Puerto Angosto just east of that island, on the narrowest part of the strait. Late in the season, and at a very unfavorable time in that climate for collecting (May 1), he reached Ushuaia on the Beagle Channel, whence he returned to Punta Arenas. His collections, and those made by Nordenskjöld along the Gallegos, and at Ultima Esperanza and Lago Sarmiento, have been already worked and partially reported on, as to the Phanerogams and Bryophytes. The same report also includes a collection by Bruno Ansorge who had been engaged at Goldmines of Paramo on the Atlantic coast of Fuegia.

The Princeton University Expeditions (Dr. J. B. Hatcher and O. A. Peterson, 1895–96) were almost simultaneous with the Swedish, and in large measure over part of the same ground, penetrating farther up the Eastern Cordilleras, with the natural result that the collections are not very dissimilar, and that most of the new species have been described in the Swedish reports. As Professor Evans and Mr. Dusén have shown above, the Hepaticæ and Musci contain interesting novelties. As to the phanerogams the most interesting novelties have been described in their place in Part V of this volume.

In the season 1899–1900 Mr. Barnum Brown collected chiefly Flowering Plants along Rio Gallegos, and Cryptogams in Fuegia, near the Beagle Channel and on western coast and islands of Fuegia. This collection is in the Herbarium of the New York Botanical Gardens, and its phanerograms are included in this volume.

2. BIBLIOGRAPHY.

For the names of species and their general distribution, our chief reliance has been the *Index Kewensis* as amended and supplemented by O. Kuntze's *Revisio Plantarum* and by Engler and Prantl; also the American text-books, such as Gray's Synoptical Flora, and Britton and Brown's Illustrated Flora; Coulter's Rocky Mountain Flora, and Sereno Watson's Botany of California. For the characteristic Patagonian plants we use, beside the older works, as Persoon's Synopsis and DeCandolle's Prodromus, the Flora Antarctica, and the great works of Gay, of the Philippis, Reiche and the Argentine botanists, and most of all Carlos Spegazzini's and Per Dusén's recent contributions.

For characteristic field-notes we are indebted chiefly to this last mentioned contribution, and to Hooker, to Cunningham, and to Hatcher, and as to North Patagonian plants to Ball's paper in the Linnæan Society's Journal.

The subjoined list indicates the books and authorities which we have found most serviceable for descriptions of the Patagonian species.

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PART VIII.

TOPOGRAPHY.

For botanical purposes we divide the Patagonian region into several districts. The great eastern plain has the Province of Rio Negro in the north, so named from its chief river. Its northern boundry is Rio Colorado. At the mouth of Rio Negro is the town Carmen de Patagones; half way up its main course is Choele-choel; and as far again is Roca fortress, where the main river is formed by a northern and a southern branch, the Neuquen and the Limay. Mid-Patagonia is called Chubut, from its long and very circuitous river. Rawson is a settlement near the mouth of this river, and Trelew is farther up. Puerto Madryn is a small seaport further north of Rawson, and Puerto Deseado (Port Desire), at mouth of Rio Deseado, is southward of the great Gulf of San Jorge, near the 48th parallel. South Patagonia is called the Province of Santa Cruz, from its chief river. Farther south it contains the Rio Gallegos, with Puerto Gallegos. Along the Magellan Strait, and extending up to near the Rio Gallegos is the region of Magellan's-land, or Magellanica. And south of the Magellan Strait is what we have termed Fuegia, the great Archipelago of the South. On the Strait of Magellan are the two towns, Punta Arenas, in its eastern part, and Puerto Angosto, where it is narrowest, towards its western exit. West of the Great Cordilleras, and along the entire Strait of Magellan the political status is Chilian; and on the long Concepcion Channel which separates Wellington Island from the mainland, Port Eden is situated about 49° S. Lat. Most of the Cordillera, with its great lakes, and the eastern plains and plateau at the foot of the mountains, also part of Fuegia, including Ushuaia and Lapataia on the Beagle Channel, belong to Argentina.

The following list gives the situation of most of the locations mentioned in the preceding pages.

GLOSSARY OF LOCALITIES. (Map, Pl. II, III.)

Adelaide Archipelago, on Pacific Coast, Lat. 52° S.
Admiralty Sound, penetrating Fuegia from Useless Bay, Lat. 54° S.
Agaia, in Hoste Id.
Aicina, in Hoste Id., opposite Ushuaia, Lat. 55° S.
Aisen, Rio, W. Patagon., entering the sea at S. Lat. 45° 20′.
Alumine, Rio, in Neuquen R.
Amarillo, Lago, S. of Grand Gente Bay.
Ancud, Gulf, on W. Coast, about Lat. 41° 40′ S.
Anegada Point, in Magellan Str., Fuegian side, at first Narrows.
Angosto, Puerto, in W. Magellan Str., Desolation Id.
Arenas, Punta, settlement on W. side of Magellan Str., Lat. 53° 15′ S.
Arenas, Punta, on E. side of N. Fuegia, Atlantic Coast, Lat. 53° 20′ S.
Argentino, Lago, in S. Patagon., near Cordilleras, Lat. 50° 30′ S.
Aysen, Rio, to Pacific, Lat. 45° 20′ S.
Azopardo, Rio, in S. Fuegia from Lago Fagnano to Admiralty Sound.
Baguales, district in S. W. Patagonia, by Ultima Esperanza.
Bahia Blanca, in S. Argentina, on Atlantic Coast, Lat. 38° 45′ S.
Banner Cave, Picton Id., E. of Fuegia.
Barancas de Carmen Silva, E. Fuegian Coast.
Barancas de San Gregorio, Hills to N. of Magellan Str. entrance.
Barbara Sound, from W. end of Froward Reach, southwards.
Basket Id., Pacific Coast, S. W. of Fuegia.
Beagle Channel, from Atlantic to Pacific, Lat. 55° S.
Beauclerk Id., S. of Magellan Str., and E. of Desolation Id.
Blanco, Lago, S. Patagon., Long. 71° 15′ W.
Blest, Puerto, W. shore of Lago Nahuel-huapi.
Blossom Bay, N. point of Staaten Id.
Bolsom Rocks, Chubut, Boron-aik, by Rio Scheuen.
Boucault Bay, in Magellan Str.
Brecknock Mts. and Pass, W. of Punta Arenas, neck of Brunswick Penins.
Brecknock Point and Penins., on Pacific, W. extremity of Fuegia, Lat. 54° 40′ S.
Broad Reach, southward stretch of Magellan Str., at Long. 71° W.
Brunswick Penins., W. of Broad Reach, Lat. 53° 30′ S.
Bueno, Puerto, on Sarmiento Channel, Lat. 51° S.
Buenos Aires, Lago, E. of Cordilleras, Lat. 47° S.
Burnt Id., on Orange Bay, S. of Isle Hoste; another E. of Basket Id.
Camden Id., on Pacific Coast, Lat. 54° 45′ S.
Candaluria, Rio, in E. Fuegia, probably entering Rio Grande.
Carmen de Patagones, near mouth of Rio Negro, Lat. 41° S.
Carmen Sylva, Rio, entering Atlantic at Cape Sunday, 53° 40′ S.
Carmen Sylva, Sierra, crossing Fuegia from Useless Bay to Cape San Sebastian.
Carren-Leofú, Rio, in Chubut.
Carr-aiken = Karr-aiken, on Lake Argentino.
Chacabuco, on Nahuel-huapi, Lat. 41° 30′ S.

Chalia, Rio (Rio Scheuen) to Rio Chico, Lat. 49° 20′ S.
Chico, Rio, in S. Patagon., branch of Sta. Cruz. Another from E. Magellan to Puerto Gallegos.
Chiloe Id., Pacific Coast, Lat. 43° S.
Choele-choel, on Rio Negro, Lat. 39° 20′ S.
Choique-Lauen, near Lago Musters, Chubut.
Chonkenk-Aike, by Rio Chico de Sta. Cruz.
Chonos Archip., Pacific Coast, Lat. 45° S.
Chubut, Rio and Prov., Mid.-Patagon., Lat. 44° S.
Churucca, on Sea Reach, in Desolation Id.
Clarence Id., Magellan Str., S. of Froward Reach.
Cockburn Channel, from Magellan Str., by Magdalena Channel, southwards at Long. 71° W.
Colhue, Lago, in Chubut, Lat. 45° 30′ S.
Colu-huapi, Lago, at Trelew, Chubut.
Concepcion Canal, on Pacific, Lat. 51° S.
Condor, Rio, on W. coast of Tierra del Fuego.
Confluencia, junction of Limay and Neuquen in N. Patagon.
Cook, Port, Staaten Id., N. side.
Corcovado Golfo, Pacific Coast, within Chiloe, Lat. 43° S.
Cordova Penins., N. of Long Reach on Magellan Str.
Crossley Bay, N. W. of Staaten Id., Lat. 54° 40′ S.
Darwin Canal and Sound, W. continuation of Beagle Channel, Lat. 55° S.
Darwin Mts., in W. Fuegia, N. of Darwin Canal.
Dawson Id., eastward of Froward Reach, Lat. 54° S.
Delgada, Punta, on Valdez Penins., Lat. 42° 40′ S.
Deseado, Rio and Puerto (Port Desire), on Atlantic, Lat. 47° 45′ S.
Desolation Id., the most western isle south on Magellan Strait.
Divide Point, eastern extremity of Gordon Id.
Dungeness Point, N. at eastern entrance to Magellan Strait.
Eden, Port, in Concepcion Channel, W. Patagon., about 49° S. Lat.
Elizabeth Port, in Magellan Str., N. of Punta Arenas.
Esperanza Ultima Inlet, S. Patagon, Cordilleras, Lat. 51° 20′ S.
Fagnano, Lago, extending E. by S. from line of Admiralty Sound.
Falkland Isles, in Atlantic, 540 kms. E. of entrance to Magellan Str.
Famine Bay, Fuegia, on Broad Stretch, Lat. 53° 30′ S.
Famine, Port, Brunswick Penins., Lat. 53° 30′ S.
Fontana, Lago, near Cordilleras, Lat. 45° S.
Franklin Bay, W. side of Staaten Id.
Froward, Cabo, S. E. point of Brunswick Penins.
Froward Reach, in Mid-Magellan Str., S. of Brunswick Penins., Lat. 54° S.
Fuegia (Tierra del Fuego), island to east and south of Magellan Str., Lat. 54° S., also collectively for all the islands to Cape Horn.
Gable Id., off Ushuaia, in Beagle Channel.
Gallant, Port, Brunswick Penins., at W. extremity of Froward Reach.
Gallegos, Rio, in S. Patagon., Lat. 51° 45′ S.
Good Success Bay, E. coast of Fuegia, S. of Str. of Lemaire.
Gordon Id., in W. part of Beagle Channel, Lat. 55° S.

Grafton Isles, S. of Sta. Ines Id.
Grand Gente Bay, Fuegia, on Broad Reach, at Lat. 52° 45′ S.
Grand Glacier, N. of Beagle Channel, above Lapataia.
Grande, Rio, E. Fuegia, entering the Atlantic at 53° 50′ S. Lat.
Gregory Bay, in Magellan Str., N. side of entrance.
Guaitecas Isles, on W. coast, Lat. 43° 50′ S.
Haichol, Sierra de, Neuquen.
Hall, Cape, in eastern Fuegia.
Hanover Isle, on Pacific Coast, Lat. 51° S.
Hermite Isle. N. W. of Horn Isle, Lat. 55° 50′ S.
Hombre, Puerto del.
Hope Harbor, E. coast of Clarence Isle.
Hoppner, Port, on N. coast of Staaten Id.
Horn, Cape and Isle, Lat. 56° S.
Hoste, Isle, N. W. of Horn Id., Lat. 55° 20′ S.
Iandigaia, channel limiting Argentine and Chilian parts of Fuegia.
Jacques Id., S. of Magellan Str., at 73° 30′ W. Long.
Jorge, Golfo de San (St. George's Bay), Atlantic Coast, Chubut, Lat. 46°.
Jose, Peninsula de San (Valdez Penins.), Atlantic Coast, Lat. 42° 40′ S.
Julian, Puerto de San, Atlantic Coast, Lat. 49° 30′ S.
Karr-aiken, on Lago Argentina, Lat. 50° 30′ S.
Killik-aike, on Rio Gallegos, near its mouth.
King-William Land, between Skyring Water and Smith Sound, Lat. 53°.
Kuan-aik, near Lago Argentino.
Lajara, Lago, near Cordilleras, N. Patagon., Lat. 40° 25′ S.
Lapataia, N. shore of Beagle Channel, W. of Ushuaia.
Lemaire Strait, at Staaten Id., Lat. 54° 45′ S.
Leone, Rio, L. Viedma to Argentino, Lat. 50° S.
Limay, Rio, N. Patagon., tributary of Rio Negro, Lat. 40° S.
Leones I., on Atlantic coast, near 45° S., also at mouth of Rio Sta. Cruz.
Lomas Bay, Fuegia, at eastern entrance of Magellan Str., 52° 40′ S.
Lomas Bay, second, on W. side of Dawson Id., 53° 45′ S.
Londonderry Isle, Pacific coast, W. of Gordon Id., Lat. 55° S.
Long Reach, mid-part of Magellan Str., W. Long. 72° 30′ to 73° 30′ S.
Low, Puerto, in Guaiteca Isla.
Madre de Dios Archip., on Pacific, Lat. 50° 30′ S.
Madryn, Puerto, on Atlantic, Chubut, Lat. 43° S.
Magdalena Id., just southeast of Elizabeth Id., in mid-channel of Magellan Str.
Magdalene Sound, from Froward Reach southward, 71° W. Long.
Magellan Str., from Atlantic to Pacific, Lat. 52° 20′ S.
Maipu, near Cordilleras, Lat. 40° 25′ S.
Malouine Ids., Falkland Ids. In Atlantic, 540 kms. from Magellan Str.
Manso, Rio, flowering into Reloncavi Inlet.
Martial Mts., N. of Ushuaia.
Martin, Rio San, in N. Fuegia, entering Bahia San Sebastian, 53° 20′ S.
Melville Id. small, W. of Clarence Id., Lat. 54° 30′ S.

Messier Canal, on Pacific, 48° S. Lat.
Molyneux Sound, in W. Patagon., about 50° 16′ S.
Musters, Lago, Chubut, Lat. 45° 30′ S.
Nahuel-huapi, Lago, in Cordilleras, Lat. 41° S.
Navarin Id., S. of E. end of Beagle Channel, Lat. 55° S.
Negri Fiord (Sarmiento Fiord), in angle of Magdalene Sound.
Negro, Rio, N. Patagon., Lat. 40° S.
Neuquen, Rio, tributary of Rio Negro, Lat. 39° S.
Newton Id., in Queen Adelaide Archip.
Nuevo, Puerto, on Lago Nahuel-huapi.
Oazy Harbor, Magellan Str., beyond second Narrows, N. side.
Ofqui-ness, W. coast, about Lat. 46° 45′ S.
Olivaia, Mt., N. of Beagle Channel, E. of Ushuaia.
Onniuaia, on Fuegian coast, at foot of Mt. Darwin.
Orange Bay, east of Hoste Id., Lat. 55° 40′ S.
Orr-aike, on L. Viedma.
Otway Bay, on Pacific, S. of Desolation Id., Lat. 53° 20′ S.
Otway Water, from N. side of mid-Magellan Str., Lat. 53° S.
Oveja, Sierra, on Rio Chico de Sta. Cruz.
Packewaïa, in Gable Id., Beagle Channel, 67° 25′ W.
Packsaddle Id., N. E. of Hoste Id., Lat. 55° S.
Pactolus Bay, N. coast of Staaten Id.
Palena, Rio, to Pacific, Lat. 43° 50′ S.
Pan de Azucar, on Rio Chico.
Paramo, El, N. of San Sebastian Bay, at Lat. 53° S., on Atlantic coast.
Parr-aik, by Rio Chico.
Pavon Id., S. Patagon., at mouth of Sta. Cruz River.
Pavonia, across the Str. from Punta Arenas.
Penos Gulf, Pacific coast, Lat. 47° S.
Philip Bay, Fuegia, second within Magellan Str.
Picton Id., coast of Fuegia, at entrance to Beagle Channel.
Pillar, Cape, N. W. extremity of Desolation Id., on Pacific.
Poli Carpo Cove, eastern Fuegia.
Ponsonby Land, between Otway Water and Skyring, Lat. 52° 40′ S.
Ponsonby Sound, from Beagle Channel, W. of Navarin Id., Lat. 55° S.
Porvenir Bay, E. side of Broad Reach, about Lat. 53° 25′ S.
Possession Bay, near entrance to Magellan Str., N. side.
Punta Arenas, promontory on Atlantic coast of Fuegia, Lat. 53° 10′ S.
Punta Arenas, settlement in Broad Reach, Magellan Str., Lat. 53° 15′ S.
Pyramids Mts., N. of Beagle Channel, W. of Lapataia.
Rawson, Port, Atlantic coast, at mouth of Rio Chubut, Lat. 43° 20′ S.
Reloncavi Inlet, on W. coast, about Lat. 41° 30′ S.
Rinihue, Rio and Mt., in Valdivia.
Roca, Puerto, Staaten Id.
Roca, Station and Fort, at confluence of Limay and Neuquen in N. Patagon.
St. Catherine Point (Punta Catalina), Fuegia, at E. entrance to Magellan Str.

Sta. Ines Id., S. of mid-Magellan Str.
St. John Port (Puerto San Juan), Staaten Id., Lat. 54° 45′ S.
St. Vincent, Cape, E. point, second narrows of Magellan Str.
San Antonio Cape, on W. of Dawson Id., also on N. of Staaten Id.
San Carlos, S. E. point of Lago Nahuel-huapi.
San Diego Cape, E. point of Fuegia, Lat. 54° 40′ S.
Sanguil, Sierra de, Neuquen Territory.
San Jorge, Golfo (St. George's Bay), Atlantic coast, Lat. 46° S.
San José Penins. (Valdez), Lat. 43° S.
San Julien, Puerto, Atlantic coast, Lat. 49° 30′ S.
San Martin, Rio, to Bahia San Sebastian, Lat. 53° 20′ S.
San Matias, Golfo, Atlantic coast, Lat. 41° 30′ S.
San Sebastian, Fuegia, E. coast, Bay and Cape, Lat. 53° 20′ S.
Santa Cruz, Rio, Lago Argentino to Atlantic, Lat. 50° 20′ S.
Sarmiento, Channel, Pacific coast, Lat. 51° 30′ S.
Sarmiento Fjord (Negri Fjord), at Magdalena Channel.
Sarmiento Mts., Fuegia, S. of Dawson Id., Lat. 54° 30′ S.
Scheuen, Rio (Rio Chalia), S. Patagon., to Rio Chico, Lat. 49° 20′ S.
Sea Reach, western section of Magellan Str., N. of Desolation Id.
Senger, Rio, to Rio Chubut, Lat. 44° S.
Sheep Id., S. of Orange Harbor, Lat. 55° 30′ S.
Sierra de Carmen Sylva, across E. part of Fuegia from Useless Bay to Cape San Sebastian.
Skyring Water, connecting with Otway, Lat. 52° 40′ S.
Slogget Harbor, Fuegia.
Smith Channel, leading N. from W. Magellan Str., Lat. 52° 30′ S.
Spaniard Harbor, Fuegia.
Springhill, in N. Fuegia, midway between Lomas Bay and Philip Bay, at 52° 40′ S. Lat.
Staaten Id., E. of Fuegia, Lat. 54° 45′ S.
Stanley, = Carmen de Patagones, at mouth of Rio Negro.
Stewart Id., on Pacific, at W. entrance of Darwin Canal, Lat. 54° 30′ S.
Three Brothers (Tres Hermanos), Mts., N. E. coast of Fuegia, near Cape San Diego.
Traful, Lago; Todos los Santos, Lago, in N. Patagon. Cordilleras.
Trelew, in Chubut.
Tres Montes, Cape and Penins., on Pacific, Lat. 47° S.
Tres Puntas, Cabo, on Atlantic coast, Lat. 47° 15′ S.
Trollope, Valle, Neuquen.
Uallamatu, Fuegia, E. of Ushuaia.
Useless Bay, from Magellan Str. to E., at Lat. 53° 30′ S.
Ushuaia, settlement of English Mission, on N. shore of Beagle Channel, 68° 20′ W. Long.
Valdez Penins. (San José), on Atlantic coast, Lat. 42° 40′ S.
Valdivia, City and Province on the Pacific, about Lat. 40° S.
Valentine Cape, N. point of Dawson Id., Lat. 53° 30′ S.
Vancouver Port, on S. coast of Staaten Id.
Ventana, Sierra, in S. Argentina, N. of Bahia Blanca, Lat. 38° S.
Verde, Lago, South of Lago Amarillo, N. of Porvenir in N. Fuegia.
Viedma, near mouth of Rio Negro, Lat. 41° S.

Villarino, in Golfo di San Matias, Lat. 40° 45′ S.
Villarino, Bay in W. Fuegia, between Brecknock Penins. and Darwin Canal.
Virgenes, Cabo, S. E. point of continent, Lat. 52° 15′ S.
Voces Bay (Port Famine), on Magellan Str., S. of Punta Arenas.
Wellington Id., on Pacific, Lat. 49° 30′ S.
Wollaston Id., N. of Horn Id., Lat. 55° 45′ S.
Worsley Sound, connecting with Smith Channel and Pacific, Lat. 52° S.

PART IX.

CHARACTER AND ORIGIN OF THE PATAGONIAN FLORA.

We include the mainland, and also the adjoining islands of Peraustral America, as all constituting one botanical region. This is the meaning of the term "Patagonian" which DeCandolle adopts in his *Prodromus*, where he explains Patagonian Plants, "nempe in Patagonia, insulis maclovianis, et terris magellanicis crescentes." It is incorrect to speak of this as an antarctic region; it is cold-temperate, Cape Horn being in the same southern latitude as Edinburgh is northern; and the mouth of the Strait of Magellan corresponding to central England; the Rio Sta. Cruz to Land's End; and the Rio Negro of Northern Patagonia agrees in latitude with Madrid in Spain. Whilst southern latitudes have a more rigorous climate than corresponding northern, we think that the case has been greatly exaggerated by representing the Patagonian region as in any way a counterpart of an Arctic climate. Botanically considered, the Arctic regions can scarcely be said to possess an indigenous flora; they have struggling stragglers from lower latitudes. But in some parts of the Patagonian area the indigenous flora is surprisingly rich.

We must be satisfied by referring to Dusén's observations on the west-Patagonian flora as given in this volume; and to his papers on the vegetation of western Fuegia and of the Magellan's-lands named in the Bibliography at p. 928. Alboff is enthusiastic in describing the splendid forests of Fuegia, especially of the southern and western parts of the archipelago. The scenery is shown by him to be all the more impressive because it is unexpected. After coasting along the eastern seaboard of the Patagonian mainland, with its gloomy, treeless barren surface of sand and shingle, which extends for about a thousand kilometers along the coast, and penetrating the equally uninviting parts of eastern Magellania the scene changes all at once. The northern and eastern parts of Tierra del Fuego present the same dreary aspect as before, with occasional hills. But on passing Punta Arenas, and entering the Magdalena Channel, which is the usual route for reaching the southern part of the Archipelago, one finds the picture change as if by magic. On all sides of the narrow winding channels, are lofty mountains, clothed from base to summit with fresh and gay forest verdure; and behind are peaks covered with perpetual snow, whilst glaciers and cascades abound. The forests are impenetrable, beech-trees overgrown by lichens, mosses, small filmy ferns, all delighting in the moisture; and many herbs with showy flowers, orchids, compositæ, violets, blackberries, growing amid the forests. The forests themselves continue far up the hills, the trees becoming smaller as one ascends, and also becoming more intricately woven together; not ceasing usually until they reach an altitude of some 500 meters. The dwarf forms of the southern beech, *Nothofagus antarctica* (which is *not antarctic*), here forms a barrier which cannot be passed save by hewing the way with an axe. No such forest-life is known elsewhere, even in cold-temperate regions. Alboff, calling southwestern Fuegia hyetophilous, because of its great moisture, and in contrast with the xerophilous climate of the steppe lands of east Patagonia, would call the southeastern part of Fuegia, and of the adjacent Staaten Islands, mesohyetic, or with mean-moisture. At Orange Bay, near Cape Horn, the rainfall is about twice as great as the mean, being 150 cm. (60 in.) per annum. The southern part of the Archipelago, especially along the Beagle Channel, with the islands of Navarin, Sta. Ines, Hoste, and Cape Horn present very peculiar structural and botanical features. Most significant are the numerous cases of identity, or close affinity with plants in Kerguelen Id., Southern Australia, Tasmania, New Zealand, and the southern sporadic islands. For example the most beautiful shrub in existence is the *Veronica elliptica*, of Fuegia and New Zealand, an extraordinary case of discontinuity. (See p. 722.)

The name Tierra del Fuego, the land of fire, was given by Magellan because of the numerous fires kept burning by the natives, as incidental to open-air life in such latitudes. The name Cape Horn commemorates the Dutch Seaman who wore his ship round the south and proved that the land did not extend to the south pole. Its other name Cape Stiff, is more descriptive, for its fierce eastward winds and its high "gray beards" or waves, compel seamen to avoid it in their westward passage; thus they mostly prefer the Magellan channel, with all its windings, its fogs and its rocks. To go eastwards by Cape Horn, even onwards to Australia, is only to "run the easting down" where the chief risk is that the waves may rush the ship too fast for safety.

Proceeding northward from Cape Horn, along the eastern coast of Fuegia, one comes to two groups of islands, Staaten Island, separated from the main land by the Strait of Lemaire, 25 kilometers wide, and richly wooded; the other islands are the Falklands (known to the French as the Malouines), directly east of the entrance to Magellan Strait, at a distance of 500 kilometers. These islands have rocky heights, extensive moorlands, and peat bogs, large freshwater pools and rivulets, and the extraordinary phenomenon of "streams of stones" slowly descending from the hills, like petrified glaciers from their elevated breeding-place. The absence of trees from the Falklands and the presence of some peculiar plants, most famous being the "tussock-grass" (*Poa flabellata*), and the "wiry-grass" (*Deschampsia antarctica* and *flexuosa*) are characteristic; also the *Nassauvia serpens*, which sends leagues of its root down among the rocks. The islands are also the home of forms which prove that they have been the landing place, or the point of departure, for plants which are common to peraustral America and the Australasian lands.

Niederlein refers to the arid and stern, often very bleak aspect of the vegetation of the eastern Patagonian plains; for thousands of square leagues there being nothing but dry grass, and loose sand mingled with salt; and the fierce storms come from the southern icy sea across the steppes. Rain seldom falls, and the water is received into salty morasses. No brook enters the few rivers which cross from the mountains in deep channels. The vegetation consists of few stiff grasses, woody, and mostly glutinous or thorny hairy bushes, and shrubs of 1–3 meters height, bare, stump-like, apparently dead after losing their few leaves. Even during the growing period the older branches are often leafless, and apparently lifeless. The leaves may be small and caducous, or fleshy, or leathery, hard, or prickly, or transformed into spines, and sometimes stripped off. Only a few of the flowers are remarkable for beauty, or fragrance or size.

On account of these vegetal affinities of distant lands, all the southern hemisphere has been included by some authors in a single "Antarctic" botanical region. Karl Reiche makes this one of the fifteen great floral regions of the world, being characterized by forests of evergreen beeches, Myrtaceæ, and certain Coniferæ; and he would include in it with per-austral America, southern parts of Australia, also Tasmania, New Zealand and the sporadic islands of the southern ocean (none of those with living vegetation being within the antarctic circle).

The Patagonian part of this larger complex, has been compared to an ovate leaf, its base about Sierra Ventana, in Southern Argentina, 38° S. Lat., and extending across to Valdivia on the Chilian coast about 39°. The distance from this base to Cape Horn is nearly 1,000 miles (1,600 kilometers). The leaf-pattern is unequal, having a broad eastern half, nearly entire at its margin, and a narrow western half, jagged and torn up into bits; and the midrib, represented by the Cordillera, is itself double or triple in its northward division, and is frequently cut across by rents, which continue outwards to the margins as long, very meandering rivers. The southern part, or leaf-point, is prolonged, and bent towards the east, and greatly frayed and divided, longitudinally and transversely, as if breaking to fragments. To drop the comparison with a leaf, we may merely indicate the geological bearings of its structure, as being what remains of a larger mainland which has been partly submerged, like what Scotland and Scandinavia should be if certain changes which have befallen them had been more intense. Viewed in this way, the islands and submarine banks that remain southwards, as the South Shetland Isles, may be regarded as the surviving rudiments of a drowned continent. These facts cannot here be dwelt on, but must be kept in memory when considering questions of distribution. In Vol. IV of this series of Reports Professor Ortman discusses the theory of Antarctica, or of former land-connections in tertiary times, across the South-polar regions between Fuegia and Tasmania, possibly extending to South Australia, and approaching, though perhaps not actually reaching New Zealand. Our knowledge of the southward islands has been recently enlarged by the antarctic exploring expeditions. The most interesting discovery has been of fossil pteridophytes and conifers of palæozoic age in the South Shetlands.

The correlative exposures of the land east and west of the Andean range, which is determining the political relations, as between Argentina and Chili, seem largely to have determined the botany, and first of all the climatic differences. And as the good climate, excessively moist, and very rich for its vegetation, lies away from the foci of modern civilization, and the eastern plains, very dry, and rocky, and treeless, are uninviting, the country is still unimproved as compared with other sections of Neogæa. If the mountain range and the moisture had been on the eastern side perhaps the present conditions should have been better. And men may nevertheless discover, as they are already realizing, that round by the western shore good lands remain, inviting colonization and agricultural development.

It must be conceded that in its present condition the vast eastern plain is not attractive. The special adaptations to a xerophil life are not things of beauty. Dense, woolly hair, secretions of resin and wax, reduction in size of leaves, involution of leaf-margins, closely apposed leaf-surfaces, pulvinate habit, the ramifications being very intricate and packed together into moss-like masses which you can hardly cut with a knife; thick epidermis, often backed beneath by thick hypodermis, and often strengthened by scleroderm as buttresses; deeply immersed stomata; in grasses convolute leaves and development of nodal cushions, and the brownish or lurid shading of leaves and flowers characterize that vegetation. The steppes are a low plateau, devoid of trees, but with herbs, shrubs and thorny bushes, the herbs being largely gramineous, and synantherous (of Calyceraceæ and Compositæ). In winter the bare interspaces between the shrubs become filled, after rain, by *Alfilerillo* (Erodium) which is valuable for sheep, and may yet become a leading factor for civilization. In the alluvial ground, and low parts, wheat and grape vines, and apple trees, when introduced flourish very well. The marine algæ, and the fisheries, give promise of future productiveness.

Some of the rivers which flow into the Pacific Ocean have their sources in the tertiary plateau which extends east of the main Cordilleras, and penetrate the mountain axis, cutting their way westward, a feature which is very frequent along the whole Andean Chain. In Patagonia a long line of cliffs borders the Atlantic coast, being interrupted at intervals, where broad valleys open into the sea, and carry rivers from more elevated parts and the mountain lakes. This general plain rises towards the Cordilleras, with depressions which contain the straggling streams and the salinas, or saltish lakes; whilst occasionally, especially in the southern parts, immense sheets of basaltic lava cover the surface. "The aspect rapidly changes along the approaches of the Cordillera. It is a broken region, often mountainous, rich in prairies, rich above all in sheets of water, the smallest of which equals the area of the great European lakes;

a privileged country, where the climate is free from extremes, where the moisture is sufficient, where forests, easily penetrated, adorn the mountain sides" (Gallois, *Les Andes de Patagonie*).

The striking phenomenon of the existence of plants of the same or of closely allied species in unconnected localities, attracted the attention of the older botanists and became a subject of speculation. The doctrine of Schouw, reinforced by Louis Agassiz, that these cases were to be explained by the creation of the original members of a species in duplicate, or in multiple, was promptly opposed by Joseph D. Hooker, whose researches into the Antarctic flora made it clear that there must be means of distribution whereby the plants of some of the regions could reach other regions. He argued (*Flora of New Zealand*, 1853), that the individuals of every species have been distributed from one center, and that species must have originated in particular centers, whence they were spread, as opportunities occurred; also that their scattering was by natural causes, but not necessarily in all cases by the same causes to which they are now exposed. Asa Gray subsequently endorsed and illustrated these views (*Flora of Japan*, 1859, reprinted in Gray's *Scientific Papers*, II, 126 sqq.) insisting on the local origin of species, and on their migrations from one place to another, often under the pressure of climatal changes. The writings of Charles Darwin and Alfred Russell Wallace, substantially settled this controversy, by showing that in order to explain the present distribution we must consider the opportunities or difficulties of access of plants from other regions. Thus Darwin, and afterwards Ball, observed that the absence of trees in the Patagonian plains was due to the land having been recently submerged, and that there was no neighbouring country from which after emergence it could be stocked with suitable trees.

These considerations taken along with the xerophytic climate of the eastern plains led us to expect a very poor flora. But on including the western slope, and the islands on the west and south, the number of species of flowering plants in the Patagonian-Fuegian Region turns out to be about 2,100, with about 350 good varieties in addition. This is the same total as that made out for Victoria in Baron Mueller's analytic summary, and we regard it as a favorable showing for Patagonia. The number of genera is 522, belonging to 113 families. Of these the Gymnosperms have 12 species in 7 genera. The Monocotyledones have 481 species and 85 varieties; 106 genera, and 17 families. Gramineæ alone number so many as 276 species and 50 varieties. The Dicotyledones have about 1,600 species, and 240 varieties, in 410 genera, and 92 families.

An examination of the affinities of species and of their geographical distribution leads to the conclusion that the Patagonian lands constitute a true botanical region, well characterized yet not sharply limited by natural boundaries. Thus we find the native species settling into diverse groups, each presenting its own distributional problem, and bearing testimony which has not yet been fully interpreted.

1. We have a large number, about 120 species, of plants which are somewhat isolated, and characteristic of the region. A number of these have become famous, and many more are deserving of attention. Some of the remarkable genera are almost confined to the region, and of the other genera several species are confined to it.

2. On the other hand we note about 150 genera of plants characteristic of Temperate and Warm-temperate climates elsewhere, and most of them widespread, yet not known in Patagonia. Some of these are here represented by allied, often peculiar, forms. These facts taken together favor a theory of long-continued geographical demarcation, or partial isolation, between this and other lands of similar latitudes.

3. We also observe a large number of examples of the discontinuous distribution of identical or closely allied species; several of them remarkable; but most surprising is their large number. By the help of Engler and Prantl's *Pflanzenfamilien* we have noted as many as 106 instances of these (including a few cases of plants recently introduced). A well-known case of this discontinuity is allied species of Araucaria found here and on Norfolk Id.: others are the beautiful *Veronica elliptica* in Fuegia, West Falkland and New Zealand; allied species of *Gaimardia, Rostkovia*, *Laurelia*, the *Uncinia sinclairii, Ourisia* species, *Gunnera*, and *Carex darwinii* var. *urolepis* (see page 961), unite Patagonia with New Zealand; whilst some others inhabit Tasmania, and some (as species of *Pernettya*) are also in South Australia. Again some peculiar sections of large genera, as of *Myosotis* and of *Plantago*, and *Fagus*, link together the widely separated southern lands. *Kœnigia* (*Macounastrum*) has one species found both in Arctic islands, and in Himalaya, and another species in Fuegia. *Bryodes* has a species in Mauritius, and another in Magellan. *Eriogonum*, so characteristic of the Western United States, is represented by a species in Patagonia, and the common European *Geum urbanum*

seems to be at home in South Patagonia and Fuegia. The European *Ulex* (*furze*) has been introduced, but it has a native congener in *U. nanus*. *Abrotanella* unites, by closely allied species, New Zealand, Auckland and Campbell's islands, South Australia and Magellan-Fuegia; and *Artemisia*, a northern genus, has an outlying species in Chili-Fuegia. Several northern forms are represented in the Patagonian region, yet remarkable for their absence from Australasia.

4. Instances of northward, or meridional, continuity are most numerous and dominant; not largely with Argentina, but chiefly with the Andine region. Owing to the trend of the country and to the rivers flowing eastwards to the Atlantic, there is a continual system of clearing out and replenishing of plants. Floods exterminate the plants along the streams, carrying them to the ocean; and the vacated localities are soon populated by new immigrants from the mountains. This system renders Patagonia in large measure a botanical dependency on Chili; and also a landing place for immigrants from the far north, even from Mexico, California, Alaska, and by the Bering route from Asia; apparently receiving from, rather than contributing towards, the northern Floras. We find in our list about 140 genera of flowering plants which have thus immigrated southwards. It is about Magellan and Fuegia that there is least of this change seen; hence with these parts there is most permanency and most characteristic peculiarity of forms.

5. The eastward or latitudinal continuity is very limited, by reason of the broad ocean; and yet it is not inconsiderable. Patagonia, the Falkland Ids., Kerguelen, Australia, Tasmania, New Zealand, and the smaller sporadic islands of the south, are correlated both botanically and zoölogically. It is a difficult question to find the conditions, and the lines of movement of the colonization of each; but that there has been an interchange by land or winds or sea cannot be questioned. We find about fifty genera represented in this transverse colonization. In some cases the movement has been probably circuitous; from an Asiatic center forms migrated in opposite directions, some northward, and by trans-arctic land or ice bridges to America, whence by the meridian route of the Western Hemisphere they reached their goal in Patagonia; whilst others went from their Asiatic source southwards by an Oriental meridian-line to Eastern Australia, and so on. But a number of the forms that are common to Chili-Patagonia on one side, and to Australia-New Zealand on

the other side, are not of the Asiatic or Northern facies; and seem to be essentially and primitively Austral; such are some of the *Coniferæ*, the Chilian-Australian beeches (*Nothofagus*), peculiar *Liliaceæ*, *Centrolepidaceæ*, *Proteaceæ* (of this family, however, the Patagonian forms make a special section, reminding one of the case of the Marsupials); *Calandrinia*, *Colobanthus*, *Weinmannia* (its woolly seeds are supposed to indicate aëronautic propensities), *Discaria*, *Plagianthus*, *Drapetes*, *Nertera*, *Plantaginella*, *Vittadinia*, *Chiliotrichium*, and species of the *Mutisieæ*.

One difficulty as to these is to explain how they could reach Patagonia from Australasian sources; the winds and waves could "run the easting down" as seamen say, so as to carry Patagonian forms eastwards; "sed revocare gradum" is still an open problem. Whether the fragments of a lost continent in the Antarctic banks and islets are to be a leading factor in explicating this problem we cannot presently say. It is, of course, for many reasons probable, that the migration of some of the special forms of plants as well as of the diprotodont marsupial animals must have been westward toward America from their place of origin somewhere in Australasia; the share of New Zealand in helping migration may be considerable and all the more because the scattered Polynesian islands of lower latitudes seem to have little in common with Patagonian vegetation. Ever since Commerson's time the Magellan coast and the Falklands have been recognized as a sort of dumping ground for odds and ends of vegetation from all parts, much of it imported in straw and barrels from northern sources. Yet even prior to the advent of man it seems to have been subject to much accession of an extraordinary kind from other quarters; and the facts are there still ready to tell their history if we can only read them aright. The most important of these facts seem to belong to the geological history and palæontology of the Southern Hemisphere. In numerous cases, as was shown by J. D. Hooker before the British Association in 1866, the colonization was probably eastwards, from Fuegia to Kerguelen and directly to Australia. The large majority of Kerguelen Phanerogams were stated by him to have been immigrants from Southern America.

A slight acquaintance with the vegetation of the region suffices to show that it is derived mainly from the Chilian Flora, and in a less degree from that of Argentina, and that it also has very interesting though vastly fewer relations with the insular vegetation of the southern hemisphere, as

Kerguelen, Australasia, New Zealand and southern Africa. It is mainly through the Andine connection that it is remotely but very decidedly related to the Vegetation of Western North America and of Siberia and Central Asia.

The transverse course of the Patagonian river-valleys from the Cordilleras to the Atlantic Ocean, taken along with the fact that the xerophil climate and shingly plains practically confine the vegetation to these river-valleys, renders the flora of the northern and central parts of the region almost absolutely dependent on the constant replenishing from the Andine chain and elevated valleys. When the occupants of the transverse valleys become extinct, either being buried under the mountain débris in consequence of floods, or being carried out to sea, they are dependent on the arrival of a new stock of similar or diverse species to fill the vacancy.

Professor Neger summarizes the relations by stating that the Andine shingle-flora sends down many species to the Patagonian steppes, and in the valleys protected from the winds Central Chilian forms determine the character of the vegetation. Thus the Patagonian flora stands to the Central Chilian Flora in closer relations than one would expect, considering the intervening mountain chain. This chain causes great difference between the Chilian and the Argentine Flora; and yet Patagonia remains in close touch with the Chilian.

In illustration of this, Neger estimates that Southern Patagonia has 57 per cent. of its Dicotyledones in common with Chili; only 28 per cent. endemic, and even these allied to Chilian forms; whilst only 15 per cent. are of North Argentine or Brazilian affinity. He also remarks that the comparison of genera is more significant, of which 88 per cent. are Chilian; a few genera endemic, and less than 9 per cent. unknown in Chili, but found in Argentina or Brazil. We think that these percentages would still be near the truth although the figures in the present list are at least twice the number known to Neger.

Neger adds that Geology will aid in explaining why the colonizing was not chiefly from Argentina, though no high mountain barrier intervenes in that direction. This depends on the fact that Patagonia was recently under the sea, and after emerging, its river valleys running from west to east carried the immigrant plants across from the Chilian Andes. He notes that the flourishing European apple-trees of Patagonia prove that many other plants would thrive there, if only they could find an entrance. This consideration also helps to account for the absence of trees, inasmuch as after the extinction of large Patagonian glaciers, from none of the adjoining lands have trees been able to invade the vacant territory. The chain of the Andes from which alone they could come has few large trees southwards, and none suitable for the soil and climate of the plains or the intersecting valleys. That trees have no objection to Western Patagonia, or to the Magellan and West Fuegian districts is evident from Professor Dusén's summary. It is within the possibilities that the Patagonian region may yet be improved by the judicious introduction of trees and shrubs.

In extending our view further northwards we are struck by the fact that the famous papers by Asa Gray and Joseph D. Hooker on the Origin of the North American Flora, admit of extension in two directions, both as to the *terminus a quo* and to the *terminus ad quem.* Instead of starting from the Arctic regions or from Scandinavia our present knowledge of plant-distribution points very strongly and directly to Central Asia as the home or distributing center of the plants of all the temperate and colder parts of the world. The Arctic regions are rather remarkable for the absence of endemic species, but have formed a convenient bridge for the passage to and fro of forms belonging to the less rigorous parts of both hemispheres. Their Old World connection is shown by the examination of the *Index Kewensis* to be chiefly with the northern and central parts of Asia. The Himalaya region is unique for the diversity of its climate at its different elevations; and sends colonies of its plants westward, by Asia Minor to the Mediterranean region, and as far as the Canary Ids.; southwestward to Arabia and Africa; across the Orient to Australia; eastward to China and Japan; and northwestward to Europe.[1] The course of distribution of animals has been similar; the Elephants migrated from the foot of the Himalayas to western Europe as far as Great Britain, and even to the cold parts of northern Asia, and over into Alaska, whence they spread over parts of America, reaching as far as Patagonia. The distribution of the Mosquitoes exhibits the same tendency.[2] And in a recent paper in *Nature* upon the butterflies on the borderland of North and South America, a writer with the familiar initials E. B. P. supplies us with very pregnant suggestions in the same directions.[1] It is there shown that the U-like shape of the borderland about the Gulf of Mexico and the Caribbean Sea has had a special influence on distribution. Not only have many southern forms come northwards; but in turn northern forms have migrated southwards; oscillations of the backbone of the New World, accompanied by changes of climate also serve as determinants of the direction and result of the migrations from colder climates. Gray and Hooker gave special emphasis to the return northward of plants that had previously moved southward; but it would appear that some individuals had in Glacial times gone so far south as to leave themselves no room for repentance on the return of warmer times. They went further south, hugging the Andes, and finally a selection of them reached Patagonia.[2]

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[1] See A. F. W. Schimper (*Pflanzengeographie,* 786 sqq.) on the diversity of climate and richness of vegetation of the Himalayan Region.

[2] Monograph of Culicidæ, F. V. Theobald, British Museum, 1901. Observe especially the distribution of *Culex nigripes,* the Scourge of Alaska, from Kashmir.

It is to be remembered that in such cases the immigrants frequently change by way of adaptation to the new homes; their resemblance to the old ancestral forms will be generic rather than specific. Such a form as *Braya* presents a series of specific forms, reaching from the Alps of Europe by the Caucasian range, with a couple of species in the Himalaya region; so on through Siberia and across Bering Strait to Alaska and the mountains of Western America, down to southern Chili and Patagonia; reappearing again in New Zealand; almost belting the world.

We have been anticipated to some extent on this subject by Professor N. L. Britton, who addressed a meeting of botanists at Buffalo on the influence of the mountains of Asia in plant-distribution. Mrs. Britton informs us that a large number of our American Mosses occur as well in Cashmere Valley.[3] Wallace had something of the kind in view when in his work on *Island Life* he referred to the mountains of the Oriental islands as receiving contributions carried by the winds from the Himalayas. Asa Gray in his paper on the Flora of Japan (*Scientific Papers*, ii, p. 125), finds many species common to Japan, the Himalayan region, and Eastern North America, and that characteristic North American genera have one or more closely representative species in the Himalayan region; and he quotes an unpublished opinion of Bentham, as the natural conclusion from all these data, that the interchange between the temperate floras even of the western part of the Old World and the New World took place mainly via Asia. Mr. Bentham also refers (*Journ. Linn. Soc.*, ii, p. 34), to how frequently large American genera are represented in Eastern Asia by a small number of species, which gradually diminish or disappear westwards towards the Atlantic limits of Europe. There are few distinctively European forms in the eastern part of America, thus testifying that the European region was not directly in the line of passage between the Old and New Worlds.

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[1] *Nature*, Nov. 13, 1902. (Presumably E. B. Poulton.)

[2] See Schimper (Père), *Paleontologie Vegetale* on the Glacial and Post-glacial Flora of Europe.

[3] Mrs. Britton refers to a statement by V. F. Brotherus in the Contribution on the Bryological Flora of the northwestern Himalaya, Helsingfors, 1898. The list includes 49 genera and 96 species, all mosses which are also found in North America; the altitudes vary from 6,000 feet in the valleys to from 20,000–26,000 feet on the highest mountains, and the flora is similar to that of the mountains of Europe and temperate North America.

The distribution of animals reinforces this doctrine: Dr. C. W. Andrews has proved that the proboscidians have originated in Africa, and the presence of remains of more than a score of species of elephants and allied forms near the Himalayas points out the probable route by which they travelled from Africa to Northeastern Asia and to America. Whilst it is as a center of distribution rather than of origin, that we are speaking, probably every region which is favored with suitable climate and soil is in some degree a center of origin. Mountain chains have characteristic advantages and limitations in both ways. How much have the Andes of America and the Blue Mountains of Australia done for distribution at least in the countries beyond them, as high roads for species which could not have travelled by valleys or plains! Sheltering from excessive heat and from drought, and intercepting winds which convey seeds from afar, they afford friendly resting-places, with variety of soil and exposure so as to suit every comer; and improving the stock, by new variations, they send them out again by various channels into the general circulation. This has been the function of the American chain, as Patagonian plants abundantly testify; and the evidence points to it unmistakably as the function of the great tablelands and complex mountain system which surround the "roof of the world" in central Asia.

Most significant in this respect are those species and genera which are in large measure peculiar to and characteristic of the Region of Patagonia and Southern Chili, and which secure to the area the rank of a proper botanical region. Some of those are related to forms existing in Brazil and Texas; some allied to Australian or even South African forms;

but they have their own facies; and the presence of any of them at once identifies the source of a collection. Of these the most noteworthy are the species of *Ephedra*, *Chusquea* (Gramineæ), the Tussock-grass, and *Carex patagonica*, and species of *Uncinia*, *Philesia* and *Lapageria* (shrubs both of Liliaceæ), *Chloræa* (Orchidaceæ), *Myzodendron*, *Iodina* and *Arjona* (both of Santalaceæ), *Hamadryas* (Ranunculaceæ), *Drimys* (the celebrated Winter's-green, of Magnoliaceæ), *Anarthrophyllum* and *Patagonium* (both of Leguminosæ, the *Patagonium* having many species), *Acæna* (Rosaceæ, many species), *Azorella* (Umbelliferæ, many species), *Schinus* (Anacardiaceæ, the Incense-bush), *Pernettya* (Ericaceæ), some peculiar species of *Verbena*, and of *Berberis, Benthamiella* (Solanaceæ), *Boopis* and *Acicarpha* (both of Calyceraceæ), *Lepidophyllum*, *Nardophyllum*, and many other forms of fruticose Compositæ; many species of *Nassauvia* and also of *Perezia*, representing the Mutisieæ, a tribe of Compositæ. This is a long list of very peculiar and interesting species or genera; most of which seem to be in or near their primeval homes, and are like the survivors of the inhabitants of a more extensive land.

The general outcome of the data favors the theory of an incomplete continuity of the southern lands in former times, so as to secure opportunities of transit, and also a measure of relative isolation. The landward side secures some isolation at one part by difference of climate and by impassable plains; at another by the mountain chain which makes simultaneously a highway and a barrier. The geological data, as given elsewhere in these reports, indicate the curious and significant structure of the southern mountains, dividing into parallel ridges, and cross-hatched by deep valleys, and rivers, and gradually sinking southward as well as spreading out like a fan, until they are ultimately lost in the deep ocean, here and there a "rudiment" of former land emerging to betray their secret. A recent writer in *Nature* summarizes Sir Martin Conway's description of Tierra del Fuego, showing how the deeper hollows between the cordilleras have been invaded by the sea, so that there is a long trough parallel to the coast-line, and many a transverse channel. And he specially notes the rapid change of sea-level now going on. In Darwin's time the glaciers of Mount Sarmiento reached the sea; now they are separated from the sea by woody belts; and raised beaches and boulders give evidence of frequent oscillating of sea-level.

Southwards of this system of long fiords and cross-channels, the land is completely sunk at Cape Horn. But that seems not to be the end of the American continent. Differences of sea-soundings, and the South Shetland Isles, suggest its extension onwards towards the south pole; and finally the transpolar lands with their volcanoes, Erebus and Terror, are still claiming an Andean ancestry.

The above was in type when we saw Mr. F. W. Hutton's letter on Ancient Antarctica (*Nature*, July 13, 1905). The recent distribution of both animals and plants proves to him the former existence of an antarctic continent connecting South America with New Zealand and with South Africa in the Jurassic period. This sank in the Cretaceous period; and he believes that there has never since been a land connection between Antarctica and the other continents; but in Cretaceous and earlier times a Pacific continent connected New Guinea and New Zealand with Chili; and in Pliocene times a number of islands existed in the Antarctic Ocean, which have since disappeared. Both flora and fauna were formerly richer in that region than now; and a connection is shown between Australia and South America by animal forms like *Osteoglossum* and *Ceratodus*, also by Marsupials and South American frogs, none of which have reached New Zealand. The Antarctic islands have a number of birds, fishes and plants in common which could hardly have spread round the world under present conditions of land and water. That this spreading was comparatively late, is proved to him by near relations between the species. He argues that if there had been continuous land at the time the land animals should have spread along with the marine forms. Most land-plants on the other hand do not require absolute continuity of land to enable them to spread. It may be proper here to refer to Engler's view, cited above (p. 336), "where seeds are carried by birds and over oceans several genera have representatives both in Australia and South America"; and he adds that the facts point to a former tropical, subpolar vegetation.

Such indications seem to us to speak of a broken chain rather than a continuum of land; of an archipelago on a great scale, some of its components of the continental kind as to dimensions; and with interruptions which secured animal and vegetable isolation; yet sufficient to permit occasional passage of seeds and of birds, and an occasional transit of a quadruped, a sort of quasi-fuegian archipelago on a larger scale. The fact that the affinity of both Australia and New Zealand with South America is meagre as to its animals, and not at all general as to plants, favors the supposition that if ever a connection existed, it must have been of the nature of stepping-stones rather than of a bridge. There are also indications of some passage between South Africa and South America, but as to the nature and limitations of this we are ignorant. In some instances at least the connection seems to have been via the highlands of Eastern Africa, and the circuitous route by the Asiatic highlands and Bering Strait.

As a general rule, the plants appear to us to be a match for the animals in their power to survive adverse conditions, probably through their ability to revive after long periods of dormancy. They can passively extend their spheres, and on reaching new localities they may or may not experience a conversion into new varieties or species. If the Ice-age drove temperate plants southwards in North America, we may conclude that a return of milder seasons would not send them all back again towards the poles; but some would be allured by mountain ranges, rich in moisture and with cool air, to push their way farther south, ultimately reaching Southern Chili, and a few of them even leaving vestiges on the mountains of Central America or Peru. Thus the very same species sometimes occurs in Alaska and at Magellan Straits, as if the northern plants had made raids southwards, probably on more than one occasion, and had never failed to leave some of their party behind as permanent settlers.

SUPPLEMENTARY REVISIONS AND CORRECTIONS.

(Kük. represents *Kükenthal;* IK–s1 and IK–s2, the first and second supplements of the *Index Kewensis.* The accepted names in this list are italicised.)

Page 203. *Deschampsia* tenella, Philippi (1899; nomen mutandum, because of D. tenella, Petrie, 1890, a New Zealand grass). We may call it *D. philippii* (Phil.).

Page 204. *Trisetum* antarcticum Trin. is *Avena subspicata* (Beauv. sub Trisetum).

Page 234. *Festuca* bromoides Lin. becomes *Vulpia bromoides* (Linn.), fide IK–s2. *Vulpia* Gmelin, as a genus, differs from *Festuca* by having secund narrow and dense panicles, and the empty glumes very unequal.

Page 278. *Carex atropicta* Steud. (1855) is identical with C. lechleri (Phil. 1857); and has priority.

Page 278. *Carex banksii* Boott and (page 288), C. trifida franchetii Kurtz are identical with C. germana Boott (fide Kük.). *C. banksii* Boott must be the name as it comes earlier than C. germana in *Flora Antarct.*, page 365. It is also figured in plate cxlii of that work.

Page 280. *Carex decidua* Boott (1845) includes the later C. pedicellata Phil.

Page 281. *Carex filiformis* L. subsp. *æmatorhyncha* Desv. (in Gay's Fl. Ch.) is C. campyloxys Steud. (1855).

Page 282. *Carex gayana* Desv. (in Gay's Fl. Ch.) includes C. schedonautos Steud.

Page 285. *Carex* pedicellata Phil. is a synonym of *C. decidua* Boott (1845).

Page 285. *Carex* propinqua N. & M. is a synonym of *C. leporina* Linn.

Page 288. *Carex urolepis* Franch. is a variety of *C. darwinii* Boott. This form, once found only in Patagonia, is now discovered in New Zealand. (L. Cockayne.)

Page 306. *Tristagma* nivalis Poepp. should be *Brodiæa nivalis* (Poepp.), fide IK–s2.

Page 318. *Symphyostemon* biflorus Dus. is *S. odoratissimus* (Lindl.) Miers, fide IK–s2.

Page 345. *Prosopanche burmeisteri* DeBary (1868) includes P. americana O. Ktze.; fide IK–s2.

Page 362. *Monolepis* chenopodioides Moq. (1849), and M. trifida Schrad. (1830) are synonyms of *M. nuttalliana* (R. & S. sub *Blitum*, 1822. IK–s1 awards the priority to *M. trifida*).

Page 382. *Monocosmia monandra* R. & P. (circ. 1794), includes M. corrigioloides Fenzl. (1839); fide IK–s1.

Page 461. *Hydrangea scandens* Poepp. includes H. (Cornidia) integerrima (H &. A., and of Engl. & Prantl), Fide IK–s1. Add to its characters: *Leaves* ovate, coriaceous, entire, petiolate. *Flowers* terminally crowded in a much branching panicle, very few of them radiant.

Page 504. *Astragalus* brevicaulis Dusén (non Nelson, 1899); nomen mutandum. We may make it *A. dusenii* (Dus.); which also supersedes A. cruckshanksii Gris., 1879, because of A. (Phaca) cruckshanksii H. & A., 1833.

Page 505, no. 6. *Astragalus* (*Phaca*) *cruckshanksii* (H. & A.) is assigned by O. Kuntze to *Tragacantha* (p. 508), with its Patagonian var. *glabrescens.*

Page 505, no. 8. A. domeykianus (Phil.) is a synonym of *A.* (*Phaca*) *procumbens* (H. & A.), and is assigned by O. Kuntze to *Tragacantha.* It also has a var. *glabrescens* (p. 508).

Pages 587, 588. The name *Loasa patagonica* Speg. must have priority, having been given to a described species in 1897. Urban and Gilg's *L.* patagonica was described by them in 1900, though the name appears (nudum nomen) in Pflanzen-familien of 1894, and is quoted in IK–s1 (errore) as a good species of that date. As the other name of this species (L. pinnatifida Speg.) is preoccupied we may term it *L. karraikensis* (Urb. & Gilg.) Macl.; and the key in p. 586 should be amended accordingly.

Page 590. *Cajophora* patagonica (Speg.) U. & G. is identical with *Loasa patagonica* Speg.

Page 596. *Pterocactus kuntzii* Schurm. (Distinguish *P. kurtzii* Schurm., not in Patagon.; both are in Argentina.)

Page 597. *Daphne pillo-pillo* (Meisn.) is identical with Ovidia pillo-pillo Meisn. of DC. Prodr. Engler & Prantl refer it to *Daphne.*

Page 604. *Eugenia apiculata* DC. (non Nied., a Brazilian plant, in Eng. & Prantl, cujus nomen mutandum).

Page 605. Blepharocalyx cruckshanksii (Berg.) Ndz. is *Eugenia cruckshanksii* H. & A.; fide IK–s1.

Page 657. *Pouteria* splendens (DC. sub Lucuma), is *P. valparadisæa* Mol., fide IK–s2. Its fruit is rounded or oval, usually bitter. Occurs in Chili and Patagonia.

Page 669. Collomia linearis Nutt. (1818), is made by IK–s2 a synonym of *C. coccinea* Lehm. (probably nearly synchronous).

Page 671. *Gilia nudicaulis* Gray, 1870 (non G. nudicaulis Phil., 1895, cujus nomen mutandum; a Chilian plant).

Page 729. *Asteranthera* ovata Hansk. is identical with *A. chiloensis* Hansk; chiloensis has priority.

Page 781. *Gutierrezia* (Brachyris) *spathulata* Phil. (1865) includes G. gilliesii Gris. (1874) fide O. Ktze.

Page 784. *Nardophyllum nardophyllum* (O. Ktze., sub Aster). Kuntze's species appears to us to agree with *N. humile* in habit, habitat, in characters of head and involucre and pappus; also in having subconical compressed achenes, and therefore to be generically inseparable.

ERRATA.

(Besides the lists at the end of Parts I and III.)

Page 127. Insert head-title, PART IV.

Page 179, line 8. Read *Cabo* vice *Cobo.*

Page 269, line 10. Read *bracteosa* vice *bracteoa.*

Page 305, no. 4, title. Read *patagonica* vice *patagonia.*

Page 315, line 13. The name is *O. A. Peterson.*

Page 375. Running headline. Read *Amarantaceæ* vice *Nyctaginaceæ.*

Page 377, no. 2, title. Read *tricycla* vice *tricycle.*

Page 413, no. 2, title. The name is *Hamadryas delfini* Phil.

Page 592, no. 4, title. Read *C. patagonicus* vice *C. patagonica.*

Page 603, no. 2, title. Read *Barn.* vice *Bern.*

Page 730. After Proboscidia, read *Schmid.* vice *Scmid.*

Page 781, no. 8, title. Read *spathulata* vice *spatulata.*

Page 789, running head-line. Read *Compositæ* vice *Comsositæ.*

Page 805, line 8 from foot. Read *Candolle* vice *Condolle.*

Page 878, no. 5, title. Read Plate XXVIII *B* vice *A.*

Page 881, no. 19, title. Read Plate XXVIII *A* vice *B.*

The Explanation of Plate IV should have 41 and 43, respectively, as the page-references; of Plate XI should have *Meesea* vice *Meesia;* and the terminal "Gag." should be deleted from the title of Plate XXVI.

Plate XXVIII, title. Read *Nassauvia* vice *Nassanvia*, and *bryoides* vice *Cryoides.*

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The figures indicate the pages, frequently including more than one page. A dash (–) prefixed to the figure marks a synonym, or a casual reference.

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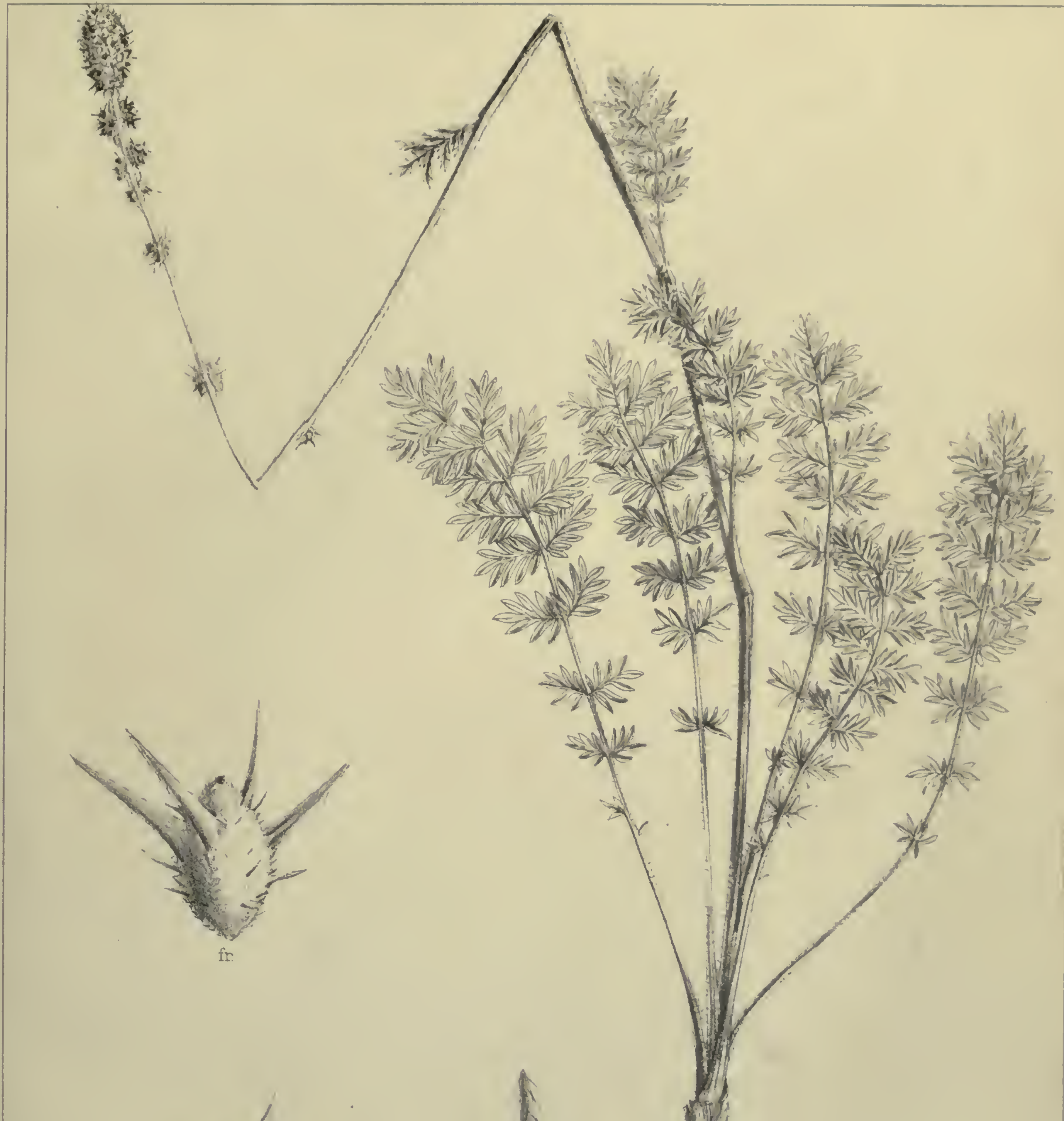
EXPLANATION OF PLATE XIX.

	PAGE
ACÆNA PINNATIFIDA Ruiz & Pav.	482

The main figure gives the general habit; of natural size.

fl, flower, showing the bracts and spines.
fr, fruit.
gl, glochidiate spine. These figures are magnified.



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West Newman imp

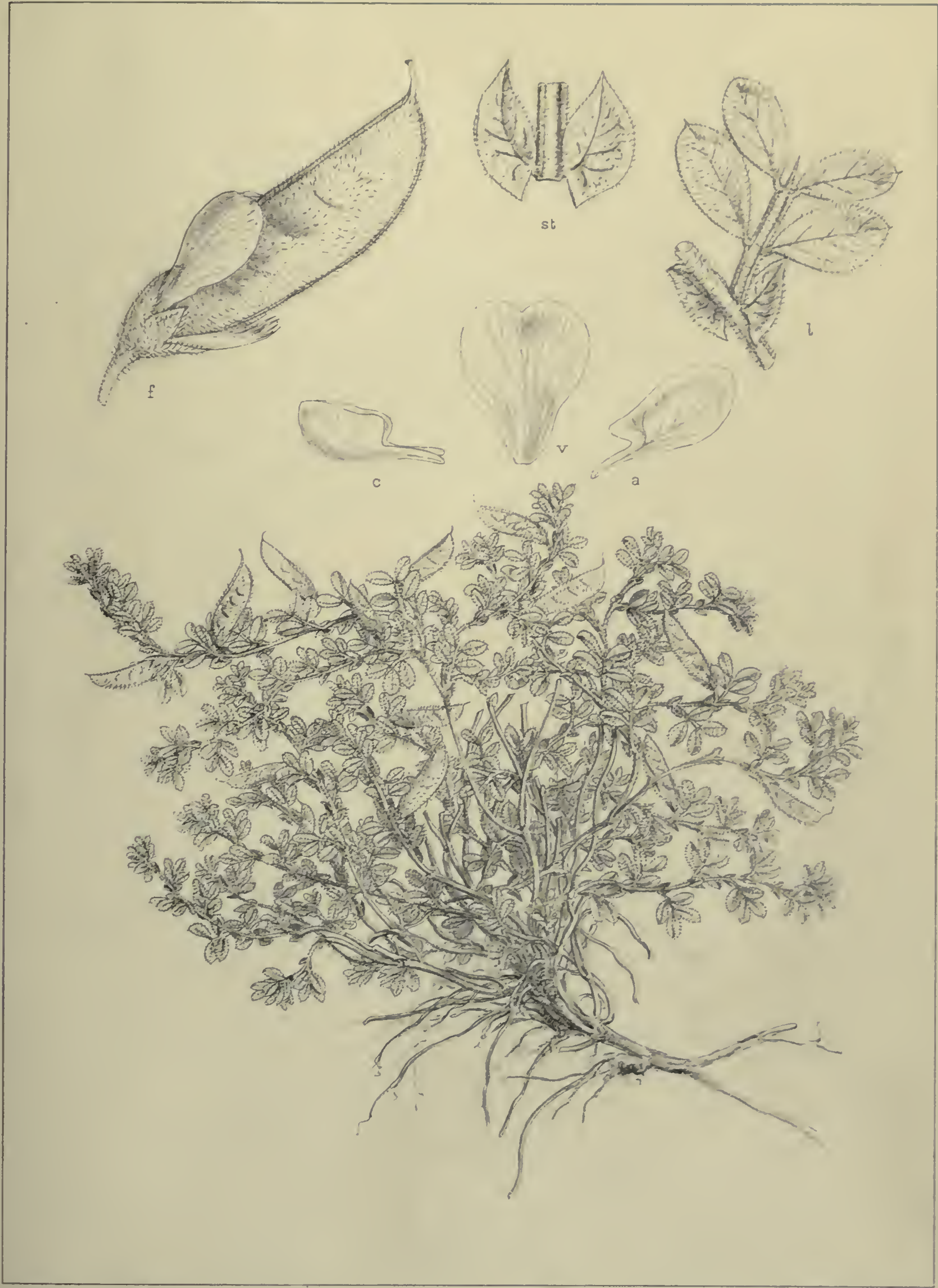
ACAENA PINNATIFIDA. R & P

EXPLANATION OF PLATE XX.

	PAGE
VICIA BIJUGA Gillies.	522

The main figure gives the general habit; of natural size.

a, ala of flower.
c, carina.
f, young fruit.
l, leaf.
st, stipules.
v, vexillum (standard) of flower. These figures are all magnified.



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VICIA BIJUGA *(Gill)*

EXPLANATION OF PLATE XXI.

PAGE

A. Abutilon vidalii (Philippi) Speg. 570

Main figure being a branch about natural size.

e, essential organs.
f, gynecium.
h, stellate hairs.
o, ovule; below *o*, a cross-section of ovary.
s, a longitudinal section of ovary.
st, stipules, subtending petiole and pedicel.

M. Myosurus gracilis Spegazzini 403

Three general figures, of natural size, and magnified, to show the habit.

a, achenes, one of them in section, showing the seed.
fl, flower.
s, sepal and stamen.

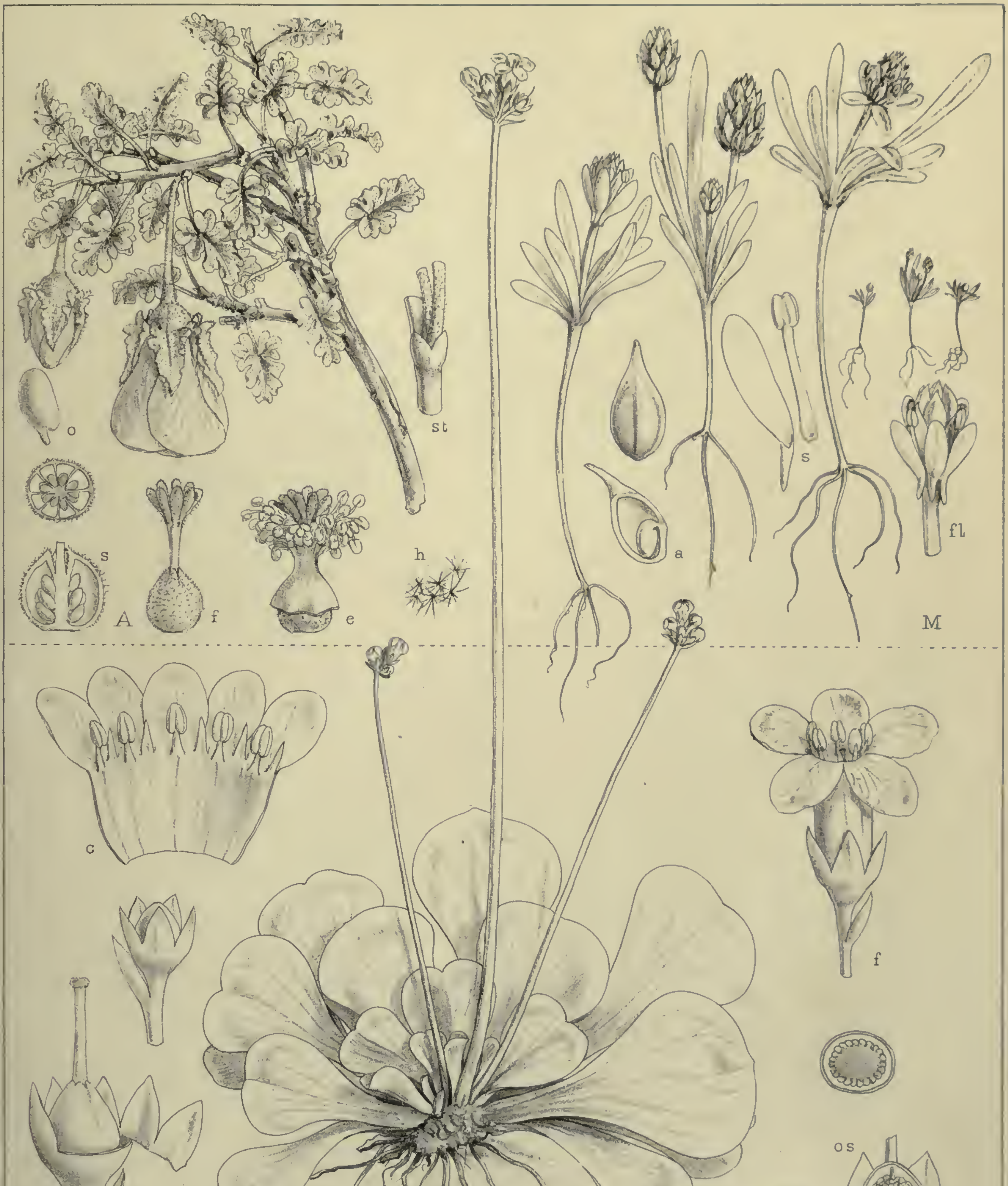
These figures all magnified.

S. Samolus spathulatus Cavanilles 652

The central figure shows the general habit, of natural size.

c, corolla, bearing stamens and staminodes.
f, flower.
fr, fruit, 2 sepals partially severed from it.
o, ovule.
os, ovary-sections, showing seeds.

These figures all magnified.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F. v Iterson del., J. N Fitch lith.
West, Newman imp.

A. ABUTILON VIDALII *(Ph.)* M. MYOSURUS GRACILIS *(Speg.)*
S. SAMOLUS SPATHULATUS *(Cav.)*

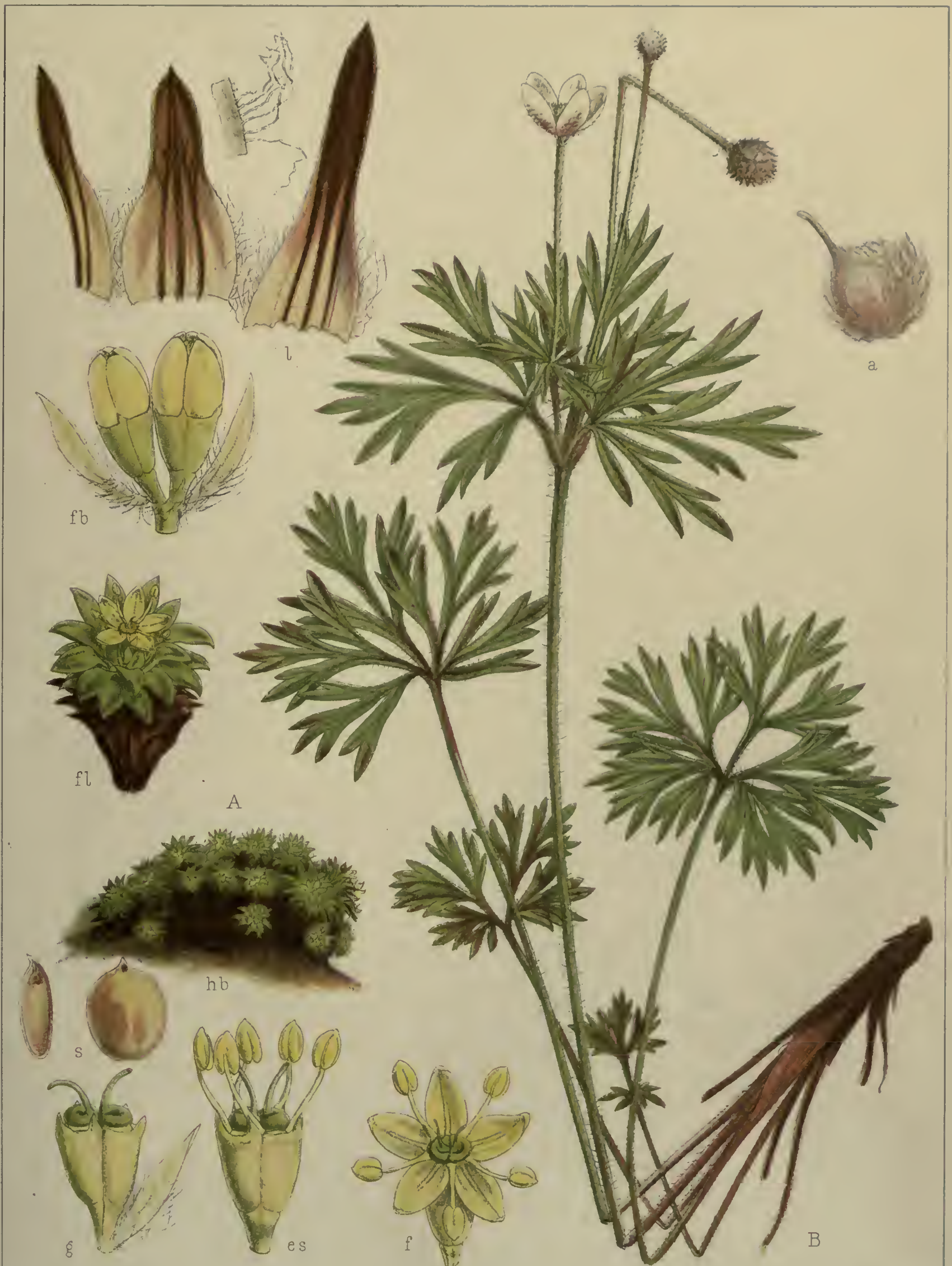
EXPLANATION OF PLATE XXII.

	PAGE
A. AZORELLA CÆSPITOSA Cav.	627

es, essential organs of the flower, showing also the calyx-teeth and the stylopodium.
f, flower; *fb*, unopened flowers, and bracts.
fl, floral leaves and opening umbel.
g, gynecium with subtending bract.
hb, habit, natural size.
l, older leaves.
s, seeds, ventral aspect and dorso-lateral section.
All magnified, except *hb*.

B. ANEMONE MULTIFIDA Poir	401

General habit, natural size, showing the flower and also the fruit.
a, an achene, magnified.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v Iterson del J N Fitch lith West Newman chr.

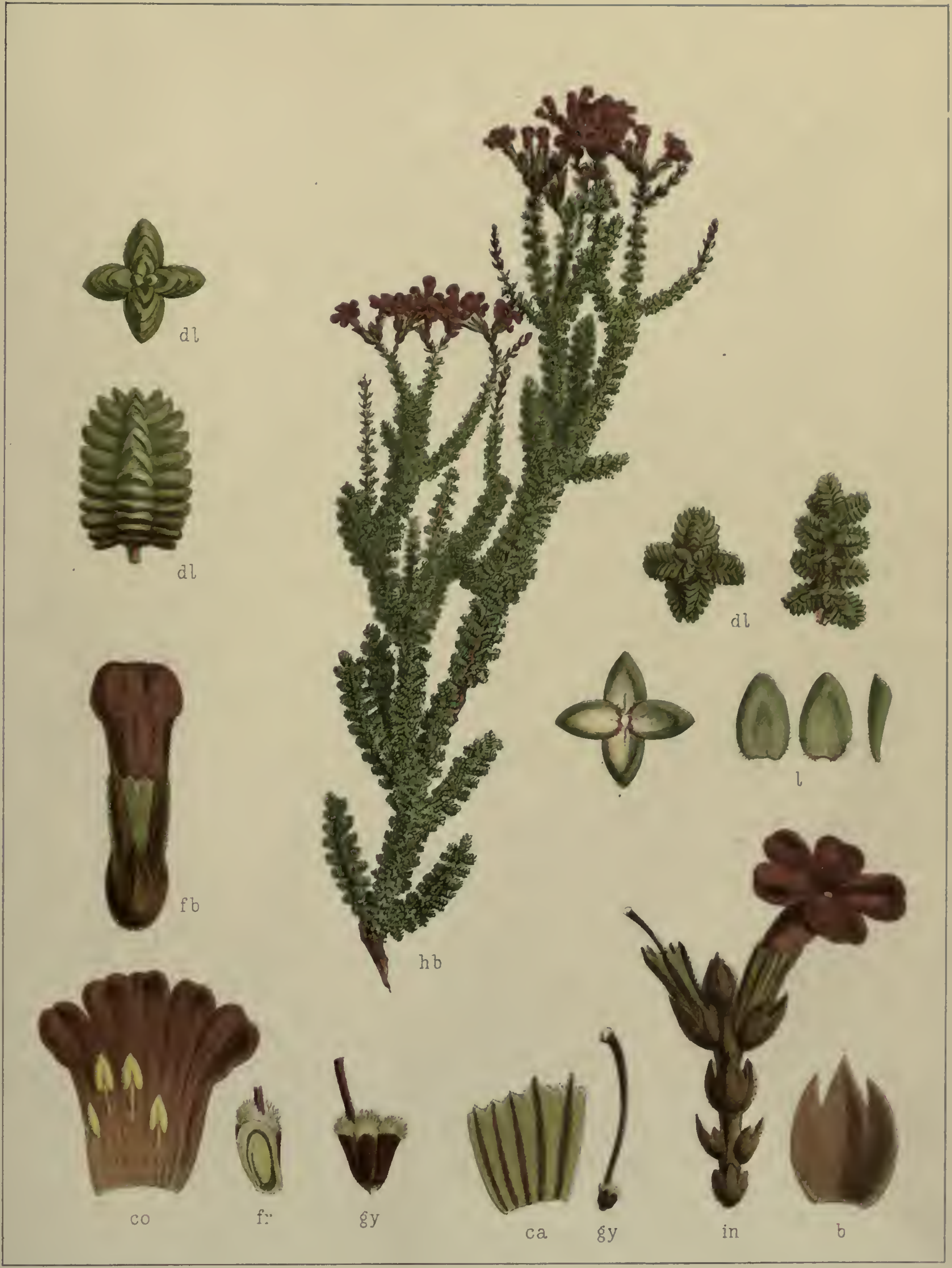
A. AZORELLA CÆSPITOSA *Cav.* | B ANEMONE MULTIFIDA *Poir*

EXPLANATION OF PLATE XXIII.

	PAGE.
Verbena carroo Spegazzini	684

b, bract, this year's leaf.
ca, calyx, spread out.
co, corolla, spread out so as to show the stamens.
dl, decussate leaves, on short branches, side views, and also from above.
fr, fruit in section.
gy, gynecium and lateral view of fruit.
hb, general habit, natural size.
in, inflorescence, with bracts and this year's leaves.
l, leaves of abortive branchlets.

All except *hb* enlarged.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F v Iterson del J N Fitch lith.
West, Newman imp.

VERBENA CARROO *Speg.*

EXPLANATION OF PLATE XXIV.

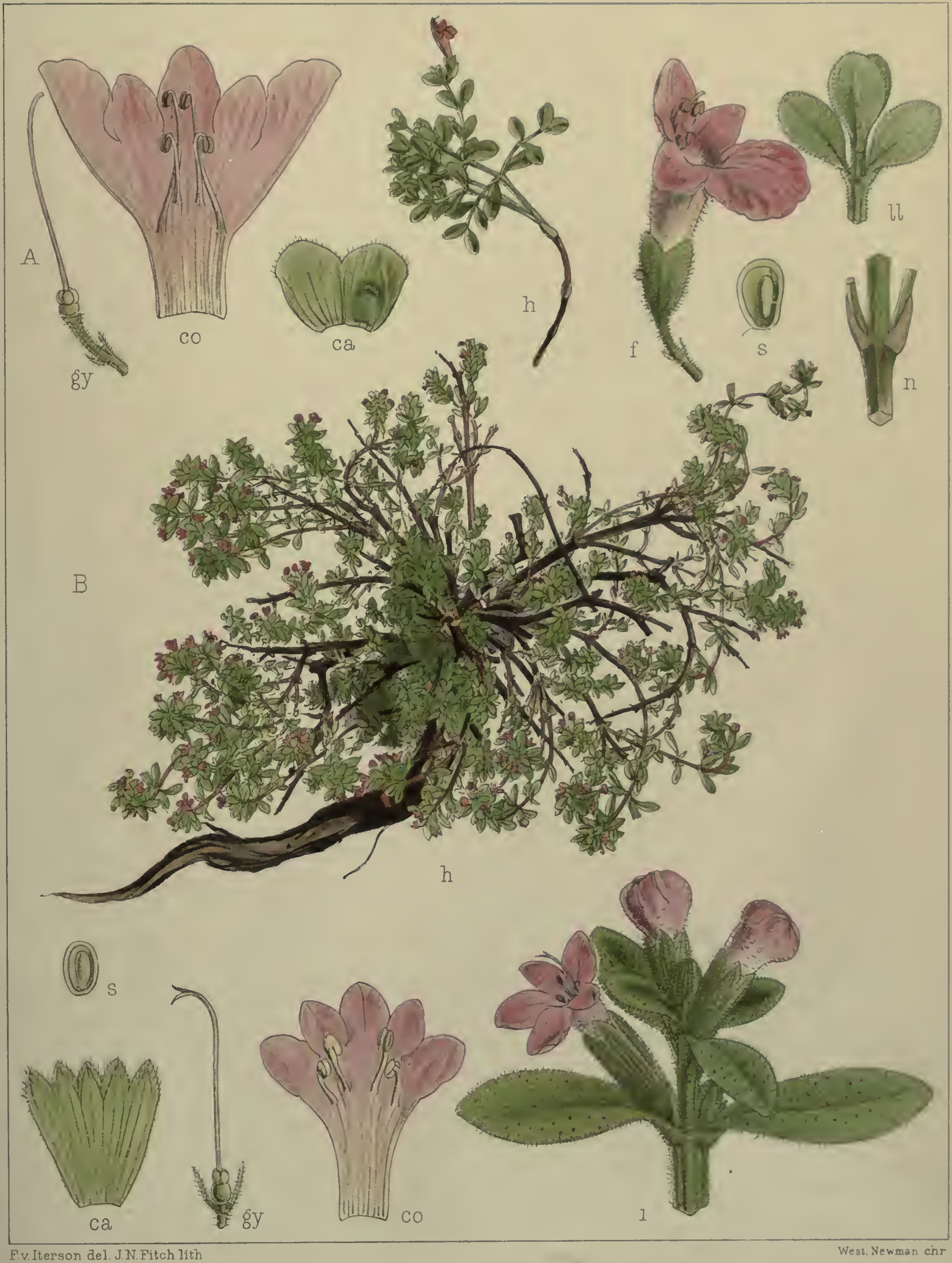
PAGE.

A. Scutellaria nummulariæfolia Hook. f. 695

B. Satureia darwinii (Benth. sub *Micromeria*) Briq. 697

ca, calyx.
co, corolla with andrecium.
f (in *A*), flower.
gy, gynecium.
h, general habit.
i (in *B*), inflorescence, and general view of the flowers and leaves.
ll (in *A*), leaves.
n (in *A*), node with section of stem.
s, nucule with seed.

h, *h*, are of the natural size, the others somewhat magnified.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F. v. Iterson del. J. N. Fitch lith
West, Newman chr

A. SCUTELLARIA NUMMULARIÆFOLIA. *Hook f.*
B. SATUREIA DARWINII, *(Benth.)*

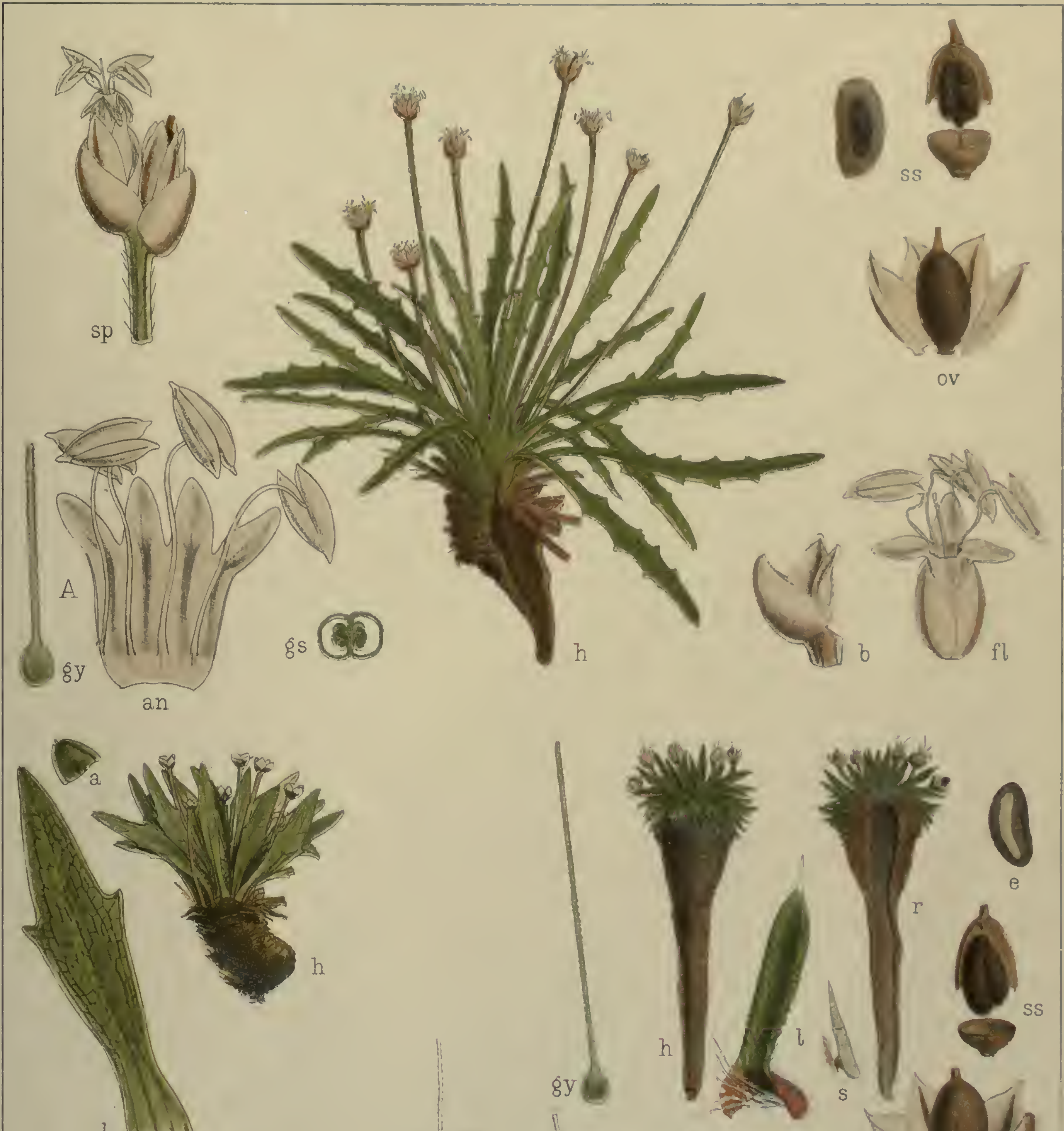
EXPLANATION OF PLATE XXV.

	PAGE
A. PLANTAGO BARBATA Forst.	732
B. P. MONANTHOS d'Urv.	736
C. P. CŒLORHIZA Morris & Macl.	734

Explanation of reference letters:

a (in *B*), apex of leaf.
an, andrecium, inserted on the corolla.
b, bracts (in *C* enclosing the ovary).
e (in *C*), embryo in sectioned-seed.
fl, flower (in *C* enclosed by the bracts).
gy, gynecium, ovary and style.
gs, gynecium (ovary) in section.
h, habit of plant, showing its leaves, inflorescence, and rootstock.
l (in *B* and *C*), enlarged leaf.
ov, ovary, with the sepals detached.
r (in *C*), rootstock, sectioned, showing its hollow structure (in this species).
s (in *C*), seta of leaf.
sp (in *A*), spike.
ss (in *A* and *C*), seeds, in the opened fruit, and one separate.

Figs. *h* and *r* of the natural size; the others magnified.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F v Iterson del. J. N. Fitch lith. West, Newman chr.

A. PLANTAGO BARBATA *Forst.* B. P. MONANTHOS *d'Urv.*
C. P. CŒLORHIZA *Morris & Macl.*

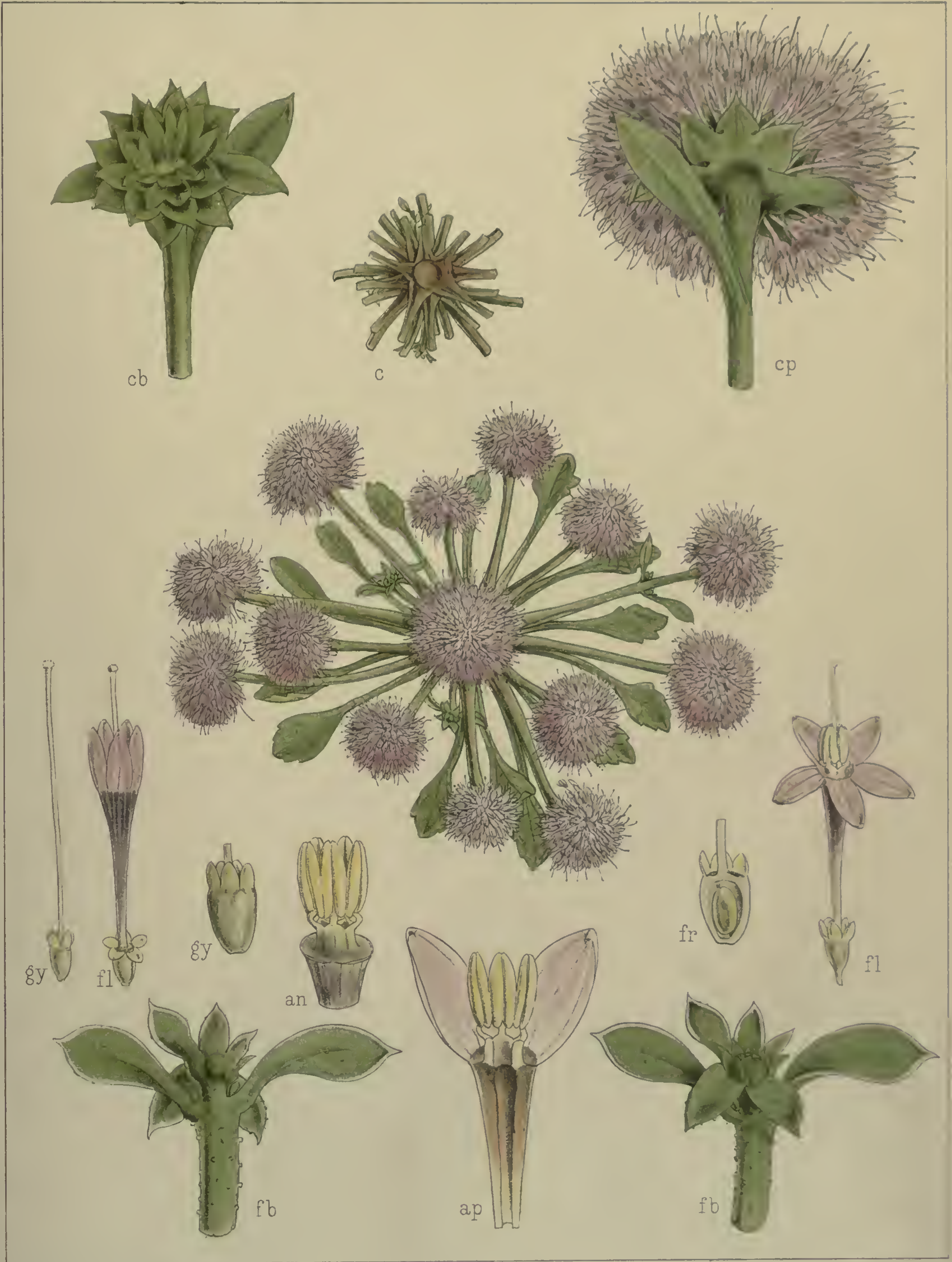
EXPLANATION OF PLATE XXVI.

	PAGE
Boopis scapigera Remy.	761

Central figure, showing general habit, with the scapes and flower-heads and radical leaves.

a, andrecium.
a, (lower) part of andrecium and perianth-leaves.
br, bracts and young heads.
c, crown of root, showing the radiating scapes and petioles.
fb, *fb*, capitulum in bud and expanded.
f, *f*, flowers.
fr, fruit, in section.
gy, *gy*, gynecium.
h, head (from underneath).

All except the central figure are somewhat magnified. (Delete "Gag" from the name.)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F. v. Iterson del. J. N. Fitch lith. West, Newman chr.

BOOPIS SCAPIGERA, Gag.

EXPLANATION OF PLATE XXVII.

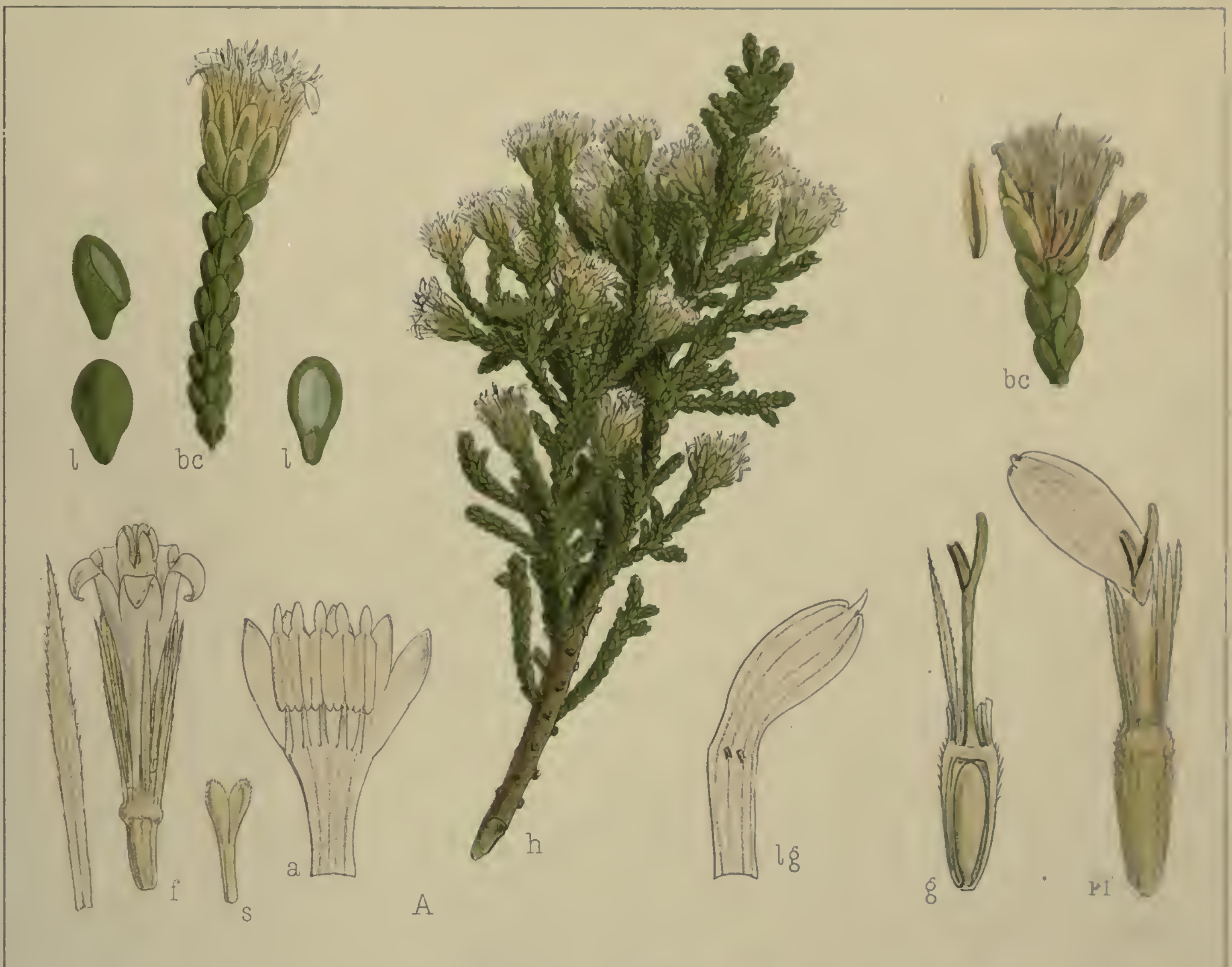
	PAGE
A. Lepidophyllum cupressiforme (Pers.) Cass.	782
B. Nardophyllum humile (Hook. f.) A. Gray.	783

In both species:

a, andrecium within the opened corolla of a disk-flower.
b (in *B*), a leafy branch.
bc, a branch with its leaves and the terminal capitulum.
f, disk-flower, showing the gynecium and the pappus. Beside this in *A* is a pappus-pale, and above it in *B*, a pappus-seta.
g, gynecium, dissected so as to show the erect ovule and the style and stigmas.
h, general habit of the plant.
l, leaves.
lg (in *A*), ligule of a ray-flower; as seen at *rf*, which is a ray-flower.
s, style branches of *A*; in *B* these are seen in fig. *g*.

In *A*, the *bc* on the right side is attended by one of its inner involucral scales, and by a young achene. The corresponding figure of *B* has two involucral scales separately shown: *b* of *B* is a young branch with subsessile capitula.

All the figures except *h*, *h*, are magnified: *h*, *h*, are of the natural size.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F. v. Iterson del. J. N. Fitch lith. West, Newman chr.

A. LEPIDOPHYLLUM CUPRESSIFORME *(Pers.) Cass.*
B. NARDOPHYLLUM HUMILE *(Hook fil.) A. Gray*

EXPLANATION OF PLATE XXVIII.

	PAGE.
A. NASSAUVIA NORDENSKJOLDII O. Hoffmann	881
B. N. BRYOIDES O. Hoffmann	878

a, andrecium.

b, branch with terminal capitulum (in *B*), with terminal glomerulus (in *A*); also exhibiting the peculiar leaf-growth.

c, capitulum, with involucre.

co (in *A*), corolla, expanded to show its bilabiate form.

f, flowers, from different sides; one in *B* from inside showing stamens.

g, gynecium, with style, and (in *B*) its silky indument.

h, general habit.

i, involucral scales and bracts.

l, leaves.

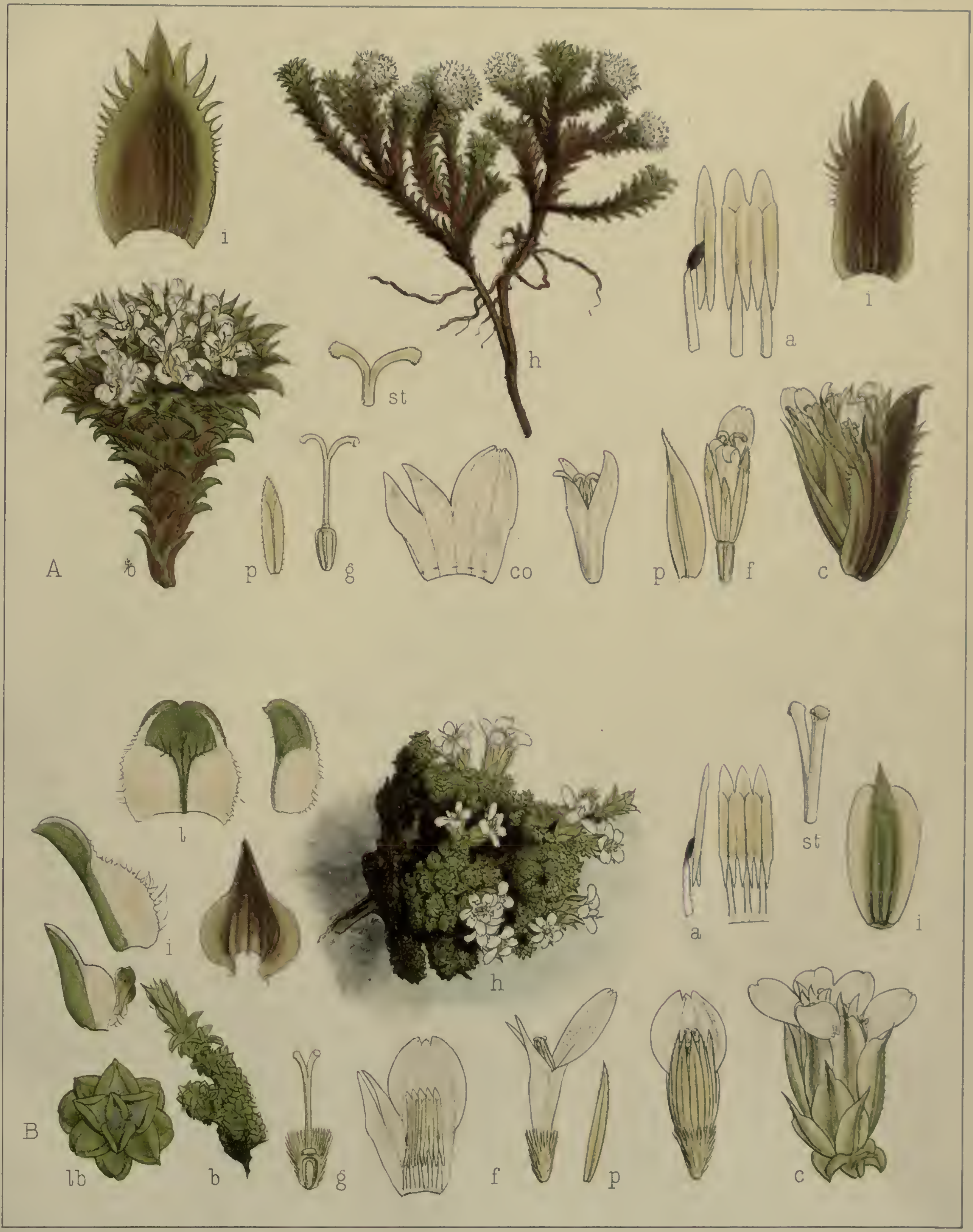
lb (in *B*), terminal leaf-rosette.

p, paleæ of pappus.

st, style-branches.

h, *h*, are of natural size, the other figures modified.

(Note, the title of the plate has misprints in the words NASSAUVIA and BRYOIDES.)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F v Iterson del. J.N.Fitch lith. West, Newman chr

A. NASSANVIA NORDENSKJOLDII *O. Hoffm.*
B. N CRYOIDES *O. Hoffm.*

EXPLANATION OF PLATE XXIX.

PAGE.

PEREZIA RECURVATA (Vahl) Less. 896

an, *an*, andrecium, the lower figure showing its insertion in the tube of the bilabiate corolla.

b, leaf-bud.

ce, corolla of disk-flower, with essential organs.

df, *df*, disk-flower, the lower with the enclosing pappus, the upper passé, with pappus expanded.

gy, gynecium.

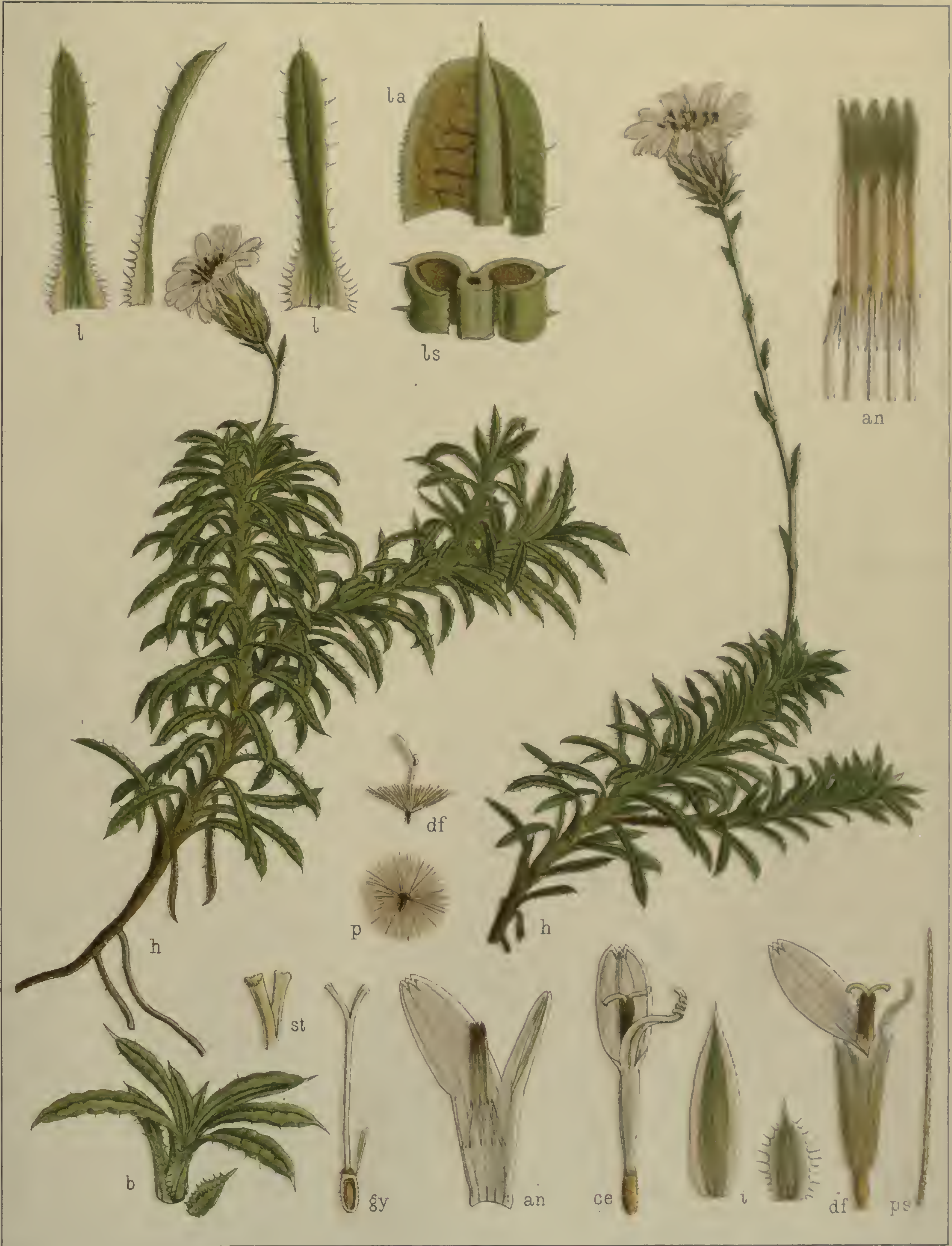
h, *h*, general habit of plant.

i, involucral scales.

l, *l*, leaves; *la*, leaf-apex; *ls*, leaf-section.

p, pappus; *ps*, one of its setæ; *st*, style-branches.

h, *h*, are of natural size; the other figures magnified.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F.v.Iterson del. J.N.Fitch lith. West, Newman chr.

PEREZIA RECURVATA *(Vahl.) Less.*

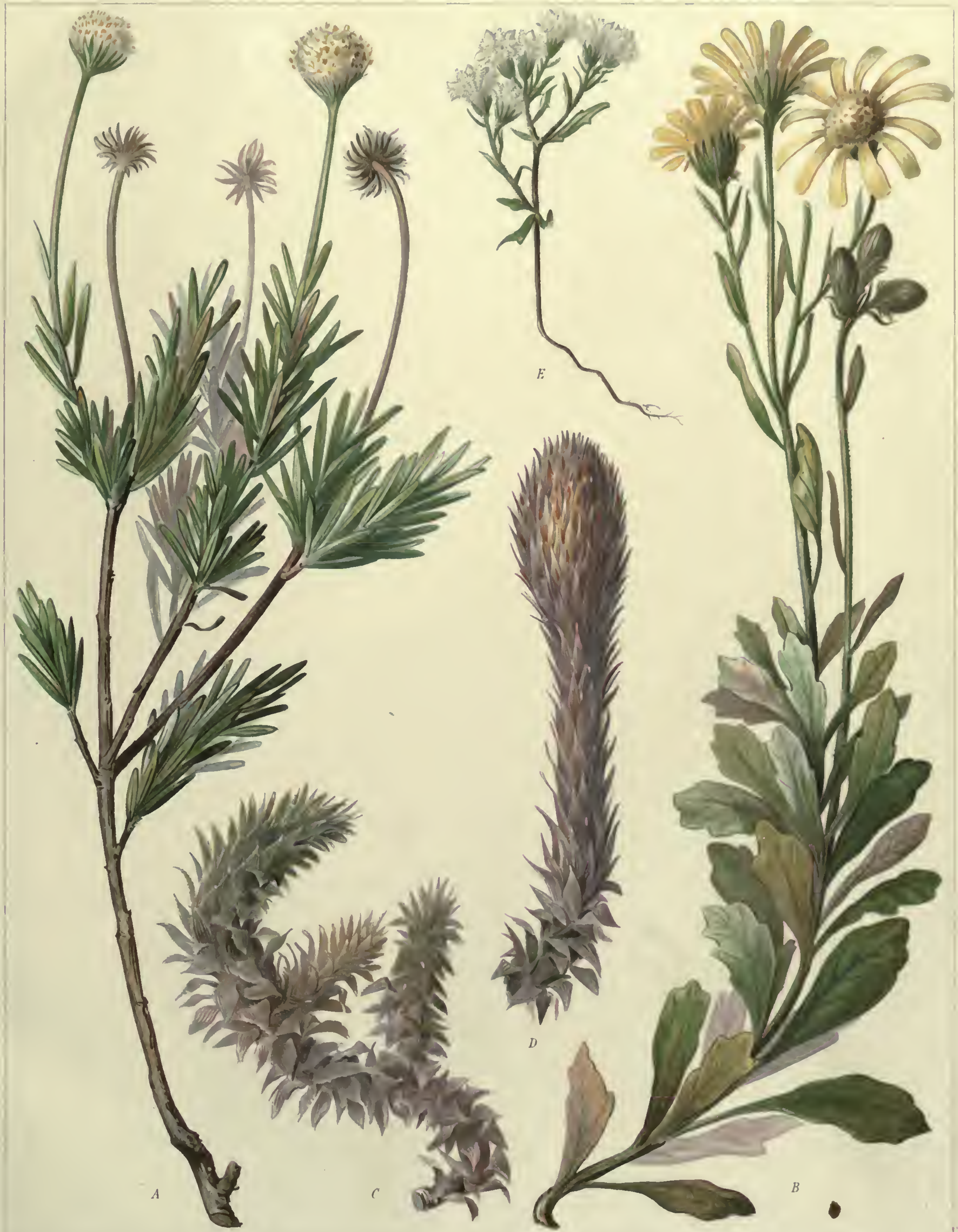
EXPLANATION OF PLATE XXX.

(Prepared in Berlin through the courtesy of Dr. O. Hoffmann.)

NEW COMPOSITÆ

	PAGE
A. SENECIO HATCHERIANUS O. Hoffm.	847
B. SENECIO DUSENII O. Hoffm.	844
C, D. NASSAUVIA DUSENII O. Hoffm.	879
E. TRIPTILION DUSENII O. Hoffm.	885

All of natural size, and showing the general habit.



Werner & Winter, Frankfort a/M. lith

NEW COMPOSITAE.

EXPLANATION OF PLATE XXXI.

	PAGE
Bacchiaris urvilleana Brongn.	810

This plate, of an undescribed species, is a replica of Plate 61 in Brongniart's *Voyage de la Coquille* (1828–29). Prepared for us through the courtesy of Professor Lloyd and of the New York Botanical Garden.

A. Branch of fertile plant, showing the opposite leaves, and the corymbed heads of pistillate flowers.

B. Branchlet of the sterile plant, with its heads of hermaphrodite, non-fertile flowers.

Figs. 1, 2. Fertile capitulum, and a flower of the same; the latter showing the probably 5-costate achenium.

3. Style-branches of the fertile flower.

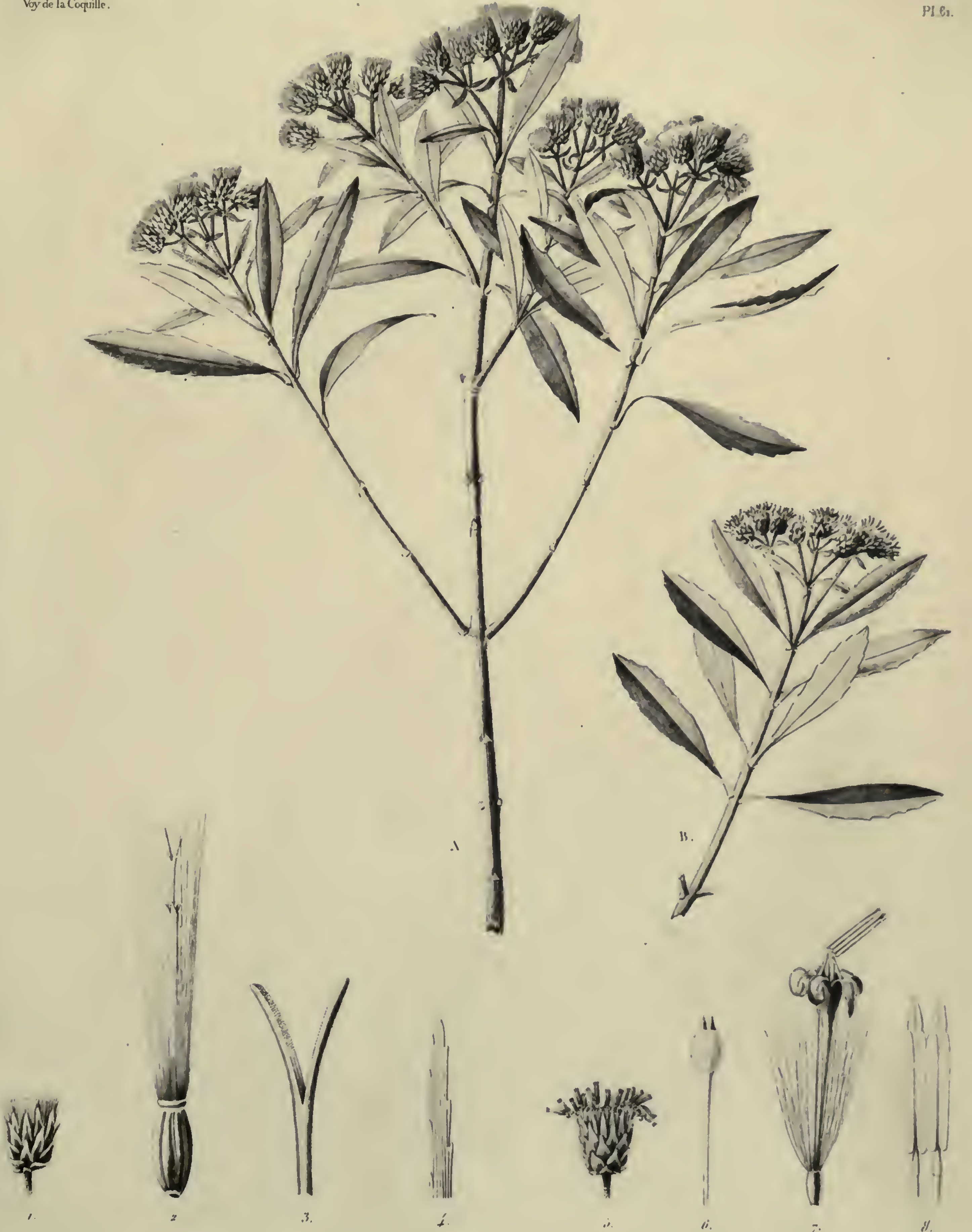
4. Tip of one of the bristles of the pappus, much magnified.

4, 6, 7. A sterile (hermaphrodite) capitulum, also one of its rudimental ovaries, and one of its flowers, with the protruding stamens.

8. Two of the anthers, showing their apical appendage, and their basal rounded lobes.

Figs. 1 and 5 also show the imbricating, subequal, involucral scales.

Voy de la Coquille. Pl. 61.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Baccharis Urvilleana.

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